THE IRON AGE

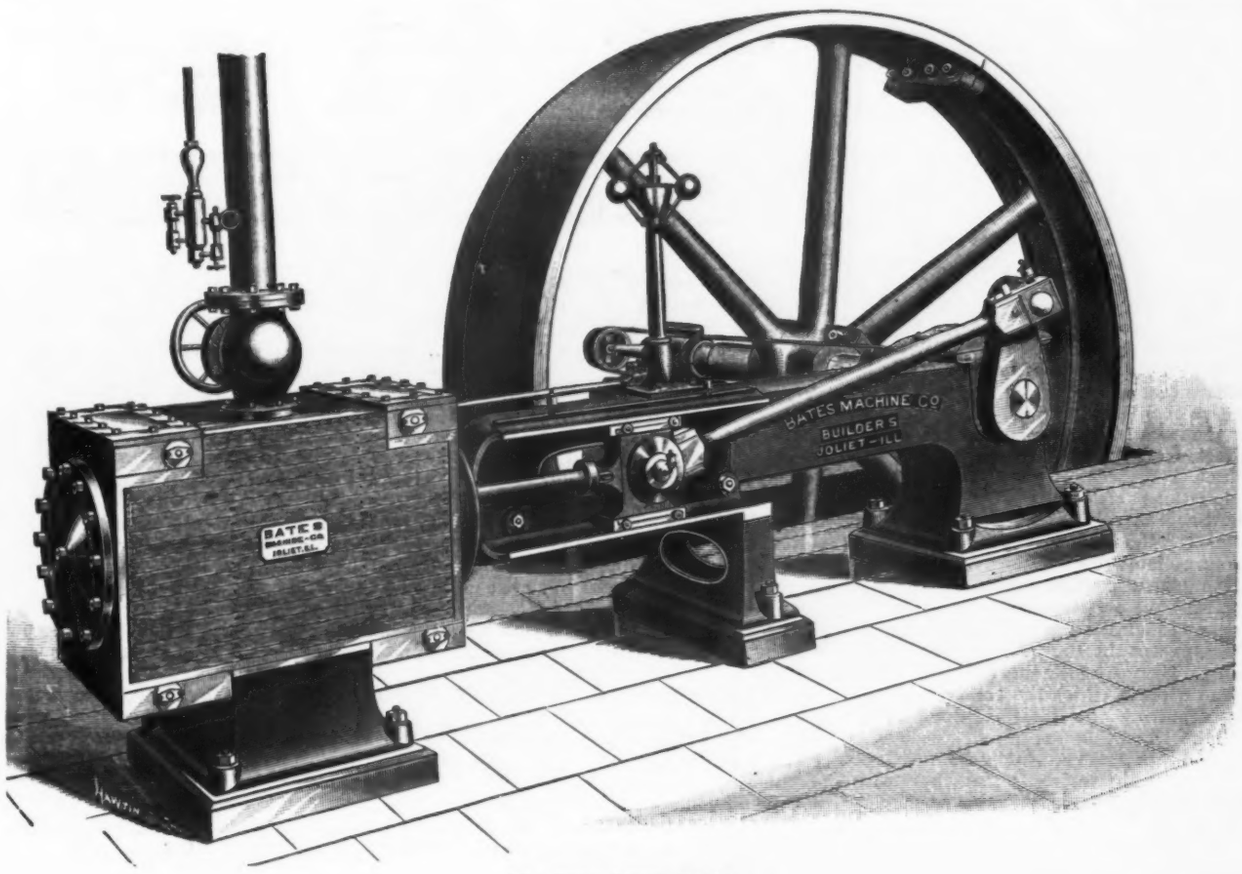
THURSDAY, AUGUST 14, 1890.

The Bates Corliss Engine.

The Bates Corliss engine, which is illustrated herewith, is patented, manufactured and sold by the Bates Machine Company, of Joliet, Ill. It is entirely new in design, and although the first made was set up only 18 months since, it has achieved remarkable results. When this company determined to begin the building of steam engines they decided not to follow in the footsteps of other builders, but to aim at the production of a machine which would be superior to anything previously put upon the market. This they claim to have accomplished. Their engine is the result of years of careful observation and experimentation. They have retained in it all that was superior in the rotary valve Corliss and eliminated the defects. They might have selected an engine that could have been built cheaper or that would have been lighter, but by so doing they would have been compelled to sacrifice the very objects they were aiming for—namely, the greatest simplicity, the highest economy, and the greatest durability. The following description gives the basis on which they rest their claims for simplicity and durability:

The valves and valve motion are its main features. The valves are flat and are operated from a connection on each end of the valve to the valve stem. This prevents the twisting off of the valves, as happens in many instances where they are operated from only one end, as on all rotary valve Corliss engines. They are so designed that their motion, after it reaches the edge of the port, is only one-half the width of the port, as it takes steam from two sides, and this short motion gives very quick admission, quicker by one-half than the rotary valve Corliss. The valves, being flat, always seat themselves perfectly, and in case of wear can be filed and scraped and made as good as new in a few hours, while in the rotary valve engine it is necessary to rebore the seats and put in new valves, which causes much delay and many dollars of expense. On account of the design of these valves the cylinder requires no relief valve, as is necessary on all rotary valve Corliss engines. The water will compress in the cylinder until the pressure equals that of the steam, when the admission valves will raise and the water escape. This prevents all possibility of accidents from blowing out cylinder heads, or any accidents that might result from water in the cylinder. The steam valves, being, in fact, balanced, will wear but slightly, requiring little or no attention, while they never have to be replaced by new ones. The fact of the valves being balanced reduces the size of the dash pots necessary to close them, and lessens the wear on the hardened steel catches. The valve motion has only about one half the number of pieces as has the rotary valve Corliss, and each piece is keyed or bolted securely to its place, and it is impossible for it to get out of order without breaking. There are no springs of any kind used in the valve motion. The fact of the valves being tripped at the wrist plate, instead of at the valve stem, simplifies the motion and gives more direct regulation. The governor is of the fly-ball pattern, and is provided with all necessary connections to automatically control the releasing gear; it is also provided with automatic stop motion, but instead of stopping the engine still, in case of an accident to the governor belt, it allows it to run and cut off at its earliest point of automatic cut off. The company guarantee perfect regulation. They claim their engine especially adapted to the running of electric railways (where the power varies continuously), owing to this perfect regulation.

In the construction of the engine certain systematic rules of proportion of one part to another (the whole being proportioned much heavier than usual) have been followed. The Bates works have been crowded with orders since the first engine was set up, 18 months ago, and the capacity of the plant has been doubled.



The Bates Steam Engine.

The contract for the construction of a lighthouse off Cape Hatteras was awarded to Anderson & Barr, of Jersey City, at their bid of $485,000. The contractors will build an immense iron caisson, surmounted with a hollow iron cylinder, and will tow this structure out to the shoal, where it will be sunk in about 24 feet of water, by weighting it down with blocks of stone. As soon as the base of the caisson rests on a good foundation its interior will be filled up solid with concrete. The cylinder on top will also be filled with concrete to the hight of 35 feet above the water level, making a foundation on which to place the lighthouse proper. The lighthouse itself will be comparatively easy to build after the foundation in one in place.

The strike of the molders in the foundry of the Union Iron Works, at San Francisco, which began last March, still continues, and work on the armored coast defense vessel Monterey has been much delayed. The principal delay is in the casting of cylinders for her engines.

INTERNAL STRAINS IN IRON AND STEEL.

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That few pieces of structural metal are in a state of internal repose, although not at the time acted upon by external stress, is a well recognized fact, yet comparatively few experiments have been made for the purpose of ascertaining and defining the kind and magnitude of these existing strains. The primary cause of internal strains in iron and steel seems to be the relative displacement of adjacent parts, such displacement resulting from the application of external stresses or from unequal rates of cooling from elevated temperatures. If resulting from independent external stresses which do not exceed the elastic limit of the metal, when the stresses are released the strains disappear. Should, however, the stresses exceed the elastic limit and cause permanent set, there is reason for believing that certain internal strains remain, although there is restoration following the release of stress. Yet from their limited extent their presence in some cases escapes direct demonstration.

The investigation of internal strains contemplates the cutting up of the metal in order to allow the strains to assert their presence by changing the form or dimensions of the piece investigated. What these slight changes in form are equivalent to in pounds per square inch stress are judged of by experimental knowledge of the stress which would be required to strain the metal a corresponding amount. Thus, if it is found that a stress of 30,000 pounds per square inch will strain a piece of metal one thousandth of its length, then the restoration of the metal a like amount from a state of internal strain indicates that a stress of 30,000 pounds per square inch had been acting in that part of the metal. In this manner we have a direct measure of the straining forces which had been at work, although the restorations are necessarily small when short specimen lengths are examined and refined. Measurements are required to attain reliable results.

No general method has been discovered whereby the presence of internal strains may be identified and their magnitude defined, except in the manner above indicated. There are instances as in the case of piano wires in which the transverse vibrations indicate the tensile strains in the metal. But this exceptional case is of limited application, and does not meet cases of compressive strains, nor when tensile and compressive strains are in close proximity to each other.

A certain electro-motive force is developed when the specimen is strained. Yet this electro motive force is apparent only when the strains are changing. The subject, however, is worthy of careful investigation. The causes which introduce internal strains may be known, and the kind, whether tensile or compressive, accurately predicted in certain cases. But beyond this we are generally compelled to destroy the metal practically for constructive purposes, in order to obtain actual proof of the magnitude of the internal strains.

Internal strains may be beneficial or detrimental according to their disposition in the metal, their magnitude, and the purposes for which the metal containing them is intended. In the construction of ordnance internal strains meet cases of valuable application. The metal at the bore of a well designed gun necessarily endures the widest range of strains, and by the introduction of internal compressive strains of definite amount at the bore, the working powder pressure is largely increased without exceeding the tensile elastic limit of the metal at the moment of discharge. This result would follow the application of lower pressures, were it not for the internal strains purposely introduced.

In other cases, as, for example, steel rails, railway axles and articles in which metal is exposed to alternate stresses of tension and compression, the presence of internal strains may be detrimental. Indeed, in a large number of instances, the value of constructive material is impaired thereby.

This last statement may need some explanation. If there are opposing internal strains present, it is obvious that both tension and compression elastic limits are lowered, as regards their resistance to external forces. There is a certain elastic movement possible with a given elastic limit of the metal, and as this movement or strain corresponds to a certain stress, evidently any internal strain which exhausts a part of this movement reduces the stress required to overcome the remainder of the elastic movement, hence an apparent reduction of elastic limit.

Internal strains when only a small part of the metal is sensibly affected, are sufficient to explain the early appearance of permanent sets which sometimes begin with low stresses and gradual develop until rapid stretching sets in. At this time the elastic limit of the entire metal may be considered as having been reached. With this elementary review, some experimental results from the Watertown Arsenal tests will be presented.

A series of experiments were carried out with some steel cylinders taken from tube forgings of 3.2 inch rifles. The quality of metal in these tubes as shown by tensile tests was as follows: Elastic limit 51,000 pounds per square inch, tensile strength 86,900 pounds per square inch, elongation in 2 inches 22 per cent., contraction of area 45.7 per cent., the original diameter of stem being 0.505 inch. Three cylinders were used, all of which had been oil-tempered and annealed and one of the cylinders had subsequently been oil-tempered but not annealed.

The method of investigating the strains in these cylinders consisted of establishing on the exposed ends data points defining the extremities of diameters laid off on the concentric rings into which the cylinders were afterward cut. These rings when detached measured about 1 inch long by 0.23 inch thick. The expansion or contraction of the detached rings showed the kind of strain to which they had been subjected in their assembled state, and the stresses corresponding to the released strains were computed, assuming for the purpose a modulus of elasticity of 30,000,000 pounds per square inch. Applying the same modulus of elasticity to tempered and to annealed metal was justified by the results of earlier experiments upon plain tensile bars. The approximate dimensions of the cylinders were: Exterior diameter 6¼ inches, diameter of bore 2¾ inches and nearly 4 inches long.

First describing the results obtained with the rings cut from cylinder No. 7. This cylinder having been re-tempered but not re-annealed, after detachment from the tube forging, therefore had been exposed during its last treatment to the direct action of the quenching liquid on all of its surfaces, ends, bore and exterior diameter. The entire surface metal of this cylinder was found in a state of compression, the interior and inaccessible portions must therefore have been in a state of initial tension to balance the compressive strains found. The magnitude of the released compressive strains corresponded to stresses ranging from 12.038 to 47.161 pounds per square inch. The greatest strains were located at the corner rings, which themselves were somewhat conical after detachment, showing that the very corners were most affected by the quenching bath. The strains just referred to pertain to rings taken from each end of the cylinder.

Afterward, the slice which was the middle section of the cylinder was experimented upon, and here the maximum compressive stress observed was 18,202 pounds and the highest tensile stress 938 pounds per square inch, but these latter figures refer to the metal after having been released from the ends and therefore having had the opportunity of changing in dimensions if there was such a tendency.

When the internal strains vary in different parts of the cylinder in such a remarkable degree, the influence of one part upon another must introduce strikingly complicated conditions. Our results indicate only the mean changes for certain portions of the metal. However, the end surfaces of the rings may have been influenced when in the assembled state by metal disposed along the cylinder in an axial direction, yet it was not found that the conical rings changed their dimensions at the larger ends materially when the metal was turned off the smaller ends, reducing their lengths from about 1 inch to ¼ inch long. In a radial direction, however, the observed changes in diameters seemed to be the means for rings of the thickness detached, for when the thickness was reduced by turning out metal the measured diameters underwent further changes.

It will be observed that the maximum compressive stress found was only 4000 pounds per square inch below the tensile elastic limit of the metal shown by the free tests, and if there was an equality of elastic limits in tension and compression in the tempered state, then it would have been capable of enduring only a comparatively low compressive stress before reaching its elastic limit as regards external stresses. The tensile tests were made with the metal as it was left when oil tempering was followed by annealing as the final operation. No special hardness noticeable with a lathe tool appeared in cutting off any of these rings however great the internal strains may have been.

Concerning the strains in the next cylinder, No. 8, they were found to be small, showing the annealing process to have been very effective. The initial stresses ranged from zero to 5037 pounds per square inch compression, one ring showing the tensile stress 999 pounds per square inch. The internal strains in cylinder No. 21, which had been tempered, followed by annealing, too, were small. A portion of the metal of this cylinder was turned off, the diameters then compared with the original, and again after the rings were detached. At the intermediate stage the maximum compressive stress was 2075 pounds, which was increased to 3457 pounds when the ring was detached. After having examined the cylinders in the condition received from the steel works in the manner above described, some additional experiments were made at the Watertown Arsenal, as follows:

A detached ring from cylinder No. 7 was heated cherry red and cooled in the open air, the effect of which was to increase the mean diameter 0.0024 inch. It was heated again to the same temperature as before and now quenched in brine at 40° F.; this increased the diameter 0.0432 inch. It was now heated for the third time and annealed in ashes. This final treatment restored the diameter 0.0075 inch, but still left the ring 0.0357 inch larger than when detached from the cylinder, at which time the diameter was 5.9528 inch. When hardened in brine the metal resisted the action of a file, and its elastic limit under compression in this state was probably very high. Computations were not entered into at the time of making these tests to show what stress would be required to reduce the diameter an amount equal to the total expansion effected by the process

of hardening, because experiments are required to demonstrate whether stresses so intense could be introduced in a large mass, but if it were possible a stress of above 200,000 pounds per square inch would be necessary.

Local strains of great intensity no doubt may exist, accounting for the ellipticity of some of the detached rings, and unquestionably culminating in the fracture of the metal That the stresses of greatest intensity were located at the corners and exposed surfaces was further shown by the behavior of another ring, designated by the letter *a*, from cylinder No. 7, an outside ring from which a section 2.25 inches long was cut. Thereupon the ends of the rings closed a distance of 0.19 inch measured on the chord. Rings taken from the cylinder next the bore when cut apart opened instead of closing. This was, of course, to be expected, because the conditions of cooling were reversed in the second case. A ring taken from the middle of the thickness of the cylinder showed very little change in the chord measurement when cut apart, the position of this ring being favorable for uniformity of strains when in the assembled state.

For the purpose of demonstrating the effect of sudden quenching upon the density of the metal, specific gravity determinations were made upon two pieces from a sector of ring *a*. First, the pieces, side by side, were heated to a cherry red, and one was quenched in water, the other in oil. The former lost in density, the latter gained. They were again heated as before, but reversed in the quenching baths. The results were the same as in the first instance—that is, the specimen quenched in water lost, the specimen quenched in oil gained in density.

Both were again heated cherry red and cooled gradually in hot air, the effect of which was to restore one piece to nearly its original density, the other piece being affected in the same manner, but not in the same degree. Finally, one piece was heated a bright red and cooled in oil, the effect of which was to diminish the density somewhat. The other specimen was heated nearly white hot and quenched in the same liquid. Now, from this high temperature the effect of oil quenching was strikingly similar to the effect of water quenching from a lower temperature—that is, the density was considerably diminished.

From these observations it appears that the temperature from which it is quenched, as well as the kind of quenching liquid, exerts a decided influence upon the density of the metal.

A statement like the last is a general one. To pursue this branch alone of the subject would open an extensive field of inquiry and tend to a more complete explanation of certain modern processes for improving the properties of steel.

From the fact that similar treatment causes both internal strains and changes in density, it appears to connect these two features as correlative functions. It, indeed, affords an easy explanation of the introduction of internal strains to suppose that they result from changes in density; and, were changes in density impossible, that internal strains would not exist, because it would become a matter of indifference to the individual parts of the metal what position they occupied once they were forced into that position.

As to the persistence of internal strains it appears logical to believe that strains may continue to exist equal to the elastic limit at any given temperature, after once a state of equilibrium has been reached—that is, after all molecular flow has ceased. And it is further believed that while molecular flow may range over wide limits of time at different temperatures, still, as touching upon the question of the ultimate endurance of stress, equilibrium is comparatively soon established. This leads to the inference that there is some stress above zero load which the metal will endure for an indefinite period of time; and that it is immaterial whether this stress is the result of internal strains in some parts, or whether it results from external forces.

The persistence of internal strains at higher temperatures were investigated in this manner: Each of the two inner rings from the end slices of cylinder No. 7 were cut apart radially, and wedges were driven into the cuts, increasing the chord measurements. The wedges were driven sufficiently to cause not any or slight permanent sets, which sets were not appreciably increased after the lapse of 20 hours under stress, but without change of temperature in the meantime.

Afterward the rings were exposed to different temperatures, cooling them and removing the wedges from time to time, in order to ascertain the annealing effect of each temperature by comparison of the successive chord measurements, which were taken after each annealing. The first ring had its wedge driven till the chord was expanded 0.0828 inch, which expansion it fully recovered from when the wedge was removed while the ring was yet cold. Driving the wedge to the same position each time the ring was exposed to a temperature of 428° F. for a period of five hours, after which the permanent set in the chord measurement was found to be 0.0032 inch, and this set was increased only 0.0002 inch by an additional exposure of five hours at the same temperature. One-half hour at 541° and three hours at 536° F, increased the sets 0.0009 inch and 0.0010 inch respectively. After five hours at 572° the set had increased 0.0026 inch, and four hours at 620° F. the set increased 0.0051 inch, making in all the total set 0.0130 inch. Passing to higher temperatures, reaching about 1450° F. the total set had become 0.0690 inch, the restoration in the length of chord being only 0.0124 inch.

These numerical values are stated to show clearly the annealing effect upon the removal of strains at comparatively low temperatures and its accelerating tendency as higher temperatures are reached. What this annealing consists of we should infer from other experiments to be that the elastic limit is lowered as the temperature increases, and with the lowering of the elastic limit follows the removal of some of the strain, an amount nearly proportional to the reduction of elastic limit. It should not be strictly proportional, because the modulus of elasticity diminishes with increase of temperature. Hence it tends to correct a part of the direct effect of the loss in elastic limit. This seems to be a rational explanation of this phenomenon and consistent with the observed facts of other experiments.

The same ring was now heated to cherry red and quenched in oil, then wedged apart 0.0800 inch, which amount did not cause appreciable set. Exposure to the temperature 410° F. for a period of four hours caused a set of 0.0191 inch, which an additional annealing of two and one-half hours increased 0.0022 inch.

Here we observe a most extraordinary difference in the persistency of the internal strains when the ring was in the state after the oil tempering process of the steel maker with the lapse of time which had intervened, and the state when recently heated and quenched in oil; a total set of 0.0034 inch in the one case, against 0.0213 inch in the other.

The second ring was treated in nearly the same manner, except that the quenching was done in water instead of oil, when after exposure to 410° F. for two and one-half hours, the enormous set of 0.0422 inch was found. Hence under the conditions of these tests the internal strains were more fickle after water quenching than after oil.

Lapse of time may have its effect in fixing the permanency of internal strains, or rather the capacity for them, or the several treatments may have been sufficiently unlike so as to introduce a decidedly different curve of strength and elasticity upon exposure to higher temperatures. In the series of temperature tests by tension, an account of which was published in *The Iron Age* of April 10, 1890, it appeared that certain other kinds of treatment there described, varied the strength at higher temperatures as well as varying the properties at atmospheric temperature.

Two slices were cut from the middle section of cylinder No. 8, and each retreated at the Watertown Arsenal. These slices were heated and then quenched from the bore; the first being quenched with oil, the second with water. Before heating and quenching data points were established and their distances apart measured, these data points defined the extremities of diameters on the concentric rings into which the slices were to be cut. These diameters were again measured after quenching, but prior to detaching the rings.

The manner in which these data points floated about the surface of the highly heated slice was remarkable, although subsequent measurements, on the detached rings, failed to show the relative displacement of these points while hot indicated either the amount of internal strains or the direction in which they were acting. It showed, however, that a certain freedom of movement existed at high temperatures, which movement then occurring was not followed necessarily by the introduction of internal strains. The maximum stresses found in the slice, which had been quenched with oil, were 34,669 pounds per square inch compression and 18,984 tension. The slice which had been quenched with water from the higher temperature of bright red, the former slice having been heated cherry red, showed in the detached rings internal stresses of 50,814 pounds per square inch tension and 59,060 pounds per square inch compression, a total range of 109,874 pounds per square inch in the same piece of metal. And even this was not all, for the rings sprung when cut apart radially, showing additional strains, not released until then.

A special experiment was made with the inner ring of the oil quenched slice for the purpose of obtaining further data upon the variability of the internal strains in a radial direction. This ring was turned off from the outside successive amounts of 0.05 inch each until its thickness was reduced from 0.25 to 0.05 inch. At each stage it was measured and an expansive movement found to be going on. The strains released when the thickness had been reduced to 0.05 inch corresponded to a stress of 50,720 pounds per square inch, against 34,669 pounds displayed by the entire ring, as first detached from the slice. The ring was finally reduced to 2½ hundredths of an inch thickness. It was now too frail to admit of accurate diametrical measurement, and was therefore cut apart radially, whereupon the ends opened 1.47 inch, showing strains differing in intensity had existed in the metal in so thin a ring as this. Although the water quenched slice was heated to a high temperature, yet, as a whole, after quenching, it was found reduced in diameter, whereas the detached ring previously referred to, which was quenched in brine, showed large expansion. It was hoped that a state of the entire slice might be obtained similar to that of the hardened detached ring, but such was not reached.

The internal strains in a steel tube forging were investigated, the interior diameter of which was about 8 inches, the ex-

terior about 15 inches. A slice was taken from each end of the forging and six concentric rings taken from one slice, five from the other. The maximum tensile stress found was 1922 pounds per square inch; the maximum compressive stress, 6065 pounds per square inch. The metal next the bore and next the exterior was in a state of initial compression. At the middle of the thickness of the forging were located tensile strains.

Another experiment consisted of measuring the internal strains in a disk cut from the sinking head of a cast iron cylinder which had been cooled from the bore according to the Rodman method. The diameter of bore of the casting was 7 inches, the exterior diameter 31 inches. The object in cooling from the bore, as well known, is to place the metal at the bore in a state of initial compression, the other portions in a state of initial tension. It is difficult to prevent a somewhat rapid rate of cooling going on from the outside, notwithstanding independent means are taken to retard it, hence there will be a thin zone of metal at the exterior in a state of compression, which zone, however, would be removed ordinarily in turning off the metal for finishing. The presence of such a zone of compression metal at the exterior of the casting was pointed out by Captain Crozier, Ordnance Department, U. S. A. in his prediction, which was verified, of the strains in the casting under discussion. In this instance the outside ring containing the original cast surface showed compressive strains corresponding to a stress of 1152 pounds per square inch. Then followed tensile strains, the maximum value of which reached 2844 pounds per square inch. The three inner rings had compressive strains, the ring at the bore displaying strains corresponding to a stress of 6480 pounds per square inch. The second ring from the bore better represents the strains which would be left in such a casting, as the metal at the bore contained more or less sand and would be bored out in finishing, and here were found strains representing a stress of 2106 pounds per square inch.

We have thus far considered that class of internal strains resulting from sudden changes of temperature. We will now refer to a case of internal strains resulting from hammering when cold. The experiment was made upon a section of steel tube 5.5 inches long, 8 inches diameter of bore and 15.5 inches outside diameter. First the bore was carefully measured in six places, three diameters in one plane were at right angles to the other diameters. The hammering was done with a 20-ounce hand hammer, striking with the round pane.

The exterior surface was hammered in the plane of one set of diameters, the effect of which was to increase the diameter of bore in this plane and to decrease the diameter taken at right angles to the hammered section. Then the tube was hammered in the plane of the second set of diameters, and this increased the length of diameters of set one without changing the lengths of set two. A portion only of the cylindrical surface was at first hammered, as regards the length of the tube, continuing and extending it over the entire cylindrical surface and measuring the diameters of the bore at different stages the behavior of the tube continued as just described. In all, the total enlargement of bore reached nearly 0.0007 inch. Next following, the tube was put in the lathe and the outside surface turned off $\frac{1}{4}$ inch on a side, thus reducing the exterior diameter $\frac{1}{2}$ inch. The total reduction was made in two stages. A portion of the surface was turned off, then the diameters were measured and a partial recovery noted, after which the rest of the surface metal was turned off. Thereupon the restoration in diameters now appeared to be complete, within the limits of observation with the micrometers.

It seems to afford a reasonable explanation of the observed phenomena to say that the direct effect of the hammering was to diminish the density of the zone of metal, $\frac{1}{4}$ inch or less in thickness, lying next the exterior surface, and this diminution in density gave a strong tendency on the part of the outside metal to assume a ring of larger diameter than before. This resulted naturally in an enlargement of the entire mass of the tube, the directly affected or outside zone being put into a state of initial compression, while the larger part of the metal was in the opposite state of initial tension. In other words, so intense were the compressive strains that the thin zone, $\frac{1}{4}$ inch in thickness, was capable of exerting a decided effect upon the larger part of the metal, notwithstanding the thickness of the remaining part of the tube was $3\frac{1}{4}$ inch.

The culmination of internal strains and their release, by reason of the fracture of the metal, has been illustrated by common experience. At least we are of opinion that internal strains, assisted more or less by external forces, have been the cause of many unexpected fractures where extreme brittleness has been displayed by metal known to possess under other conditions of fracture large ductility. These brittle unexpected fractures seem to appear more frequently in material which has been subjected to treatment known to be favorable to the introduction to internal strains. For example, flanged steam boiler heads are liable to possess internal strains, and they have certainly afforded many cases of brittle fractures before the heads were subjected to any other strains than those which were the result of the flanging process. Such fractures usually take place within a few hours after the flanging was done, and it therefore seems very probable that certain molecular movements, active during flanging, had not ceased prior to rupture, or that a change in temperature was the cause of renewed movement. It is, at least, difficult to understand why any molecular movement tending to increase strains should be resumed, once a state of repose had been reached, unless through the action of independent stresses or resulting from change of temperature.

To explain why rupture from internal strains is necessarily a brittle one, we will mention that a very limited display of ductility would be sufficient to entirely relieve the internal strains, and, further, we may conjecture that such relief is commonly experienced by the metal, but, in exceptional cases, the strains are concentrated upon some one locality, and owing to this concentration of stress, assisted, it may be, by a minute defect present, local rupture is began. Its extension follows, as a matter of course, until the strains in the metal have become exhausted.

An example analagous to this is found in the case of a bar nicked with a chisel, by which means facture is located and elongation restricted. It is a very loosely connected structure of the metal which under these conditions will not display brittleness in the fracture.

That internal strains in their release may take well defined paths through the metal and not diffuse themselves generally is illustrated by the lines of broken scale on the surface of a plate after a hole has been punched, the lines radiating from the punched hole. Again another illustration is afforded by the edges of a sheared plate, in which vicinity the scale is disturbed in a similar manner.

In tensile tests of plain bars or plate specimens the scale starts off, as above described, soon after the elastic limit is passed and it is noticeable that these lines, which are oblique in the direction which they take with reference to the line of pull, often develop in different directions in the same part of the specimen and cross each other without any apparent interference. All this goes to show that sharply defined lines of stress at times pass through the metal, and if they encounter in their course a defect like a flattened blow hole, or otherwise a lack of continuity in the metal, we may conjecture that rupture will here begin and extend, producing a brittle fracture.

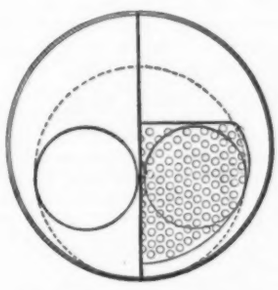
The Efficacy of Lightning Rods.

The subject of lightning rods frequently comes up for discussion in these columns. It is generally conceded that buildings are protected by the presence of lightning rods, but what is deemed a protection at the present time is far more thorough in construction and more scientific in application than what was accepted as protection only a few years since. As knowledge increases, as science advances, and as mechanical arts progress, so as to enable better construction and better materials to be employed, we reach a higher degree of protection from lightning than was formerly possible. And yet we have not reached the limit in this regard. There is much yet to be observed as to the nature of electricity, and many lessons to be learned concerning its management. Scientific men the world over, who are still studying the phenomena of electricity and of lightning, are not altogether agreed as to the conclusions to be drawn from certain observed facts, and every now and then some one in the advance guard lays down a proposition which attracts attention and provokes discussion. A case in point is found in a lecture on "Electrical Phenomena in Nature," delivered some time since by Shelford Bidwell, an English scientist. This lecture contained an important suggestion in regard to the circumstances under which lightning conductors are or are not efficient. The real value of a lightning conductor, according to Mr. Bidwell's view, is that it establishes a silent and harmless discharge of electricity as fast as it is generated in the case where a cloud charged with electricity is hovering over a building. According to this view, it would seem that we are to consider that a kind of safe and easy path for electrical discharge is formed. But Mr. Bidwell maintains (and he illustrated the theory by experiments) that if a harmless uncharged cloud received suddenly an overflowing charge of electricity from a distant cloud, there is no certainty that the overflow discharge from it, instantaneously made and without a previous electrical condition of the air, would seek out the lightning conductor. The electrical path would not have been formed in that case, and it is hopeless, we are told, to make the lightning conductor so much the easiest path that all others are protected. Concerning this proposition we might suggest that, after all, it does not necessarily change one's faith in the efficacy of lightning rods. It does not destroy the force of statistical facts that in a large majority of cases lightning conductors are an efficient protection to objects within a certain radius. No doubt, under some conditions of the air, they will not be as efficient as under others, and this, perhaps, accounts for some of the injuries by lightning done to buildings supposed, according to the generally received theory, to be fully protected.

The first of the "cupola forts" to be erected in Belgium has been tested successfully. These cupolas are of huge size and built entirely of steel. Two hundred shots from a 12-cm. gun, loaded with a battering charge, had no effect on the cupola.

New Form of Boiler.

The boiler of which drawings are here presented is built by the Heald Mfg. Company, of Crockett, Cal., and has been found to develop great power and to be economical in the use of fuel. The object of the construction here introduced is to provide for a gradual reduction and absorption of the hot gases of combustion by opposing to them surfaces of varying temperature, so that the transmission of heat will continue as long as the temperature of the gases is high enough to produce useful effect. A good idea of the form of the front end of the boiler, next to the furnace, is given in the longitudinal section and the section through the flues. In this particular boiler there are four sections filled entirely with tubes and separated from each other by an air space. The area available for flues is in this way greatly increased, and as large passages are not required between the flues for rising steam, and no incrustation to be guarded against, their number can be all the flue sheets will contain, providing a greatly increased amount of heating surface in these sections, and at the same time reducing the velocity of the hot gases and intensifying their action on the heating surfaces by reason of prolonged contact. The air spaces or chambers between the sections serve to baffle and redistribute the hot gases at each chamber by change of course, a change of area in the flues and ducts, altering their velocity, and by the gases impinging against the flue sheets. The connection between the sections may be



Section Through Flues.

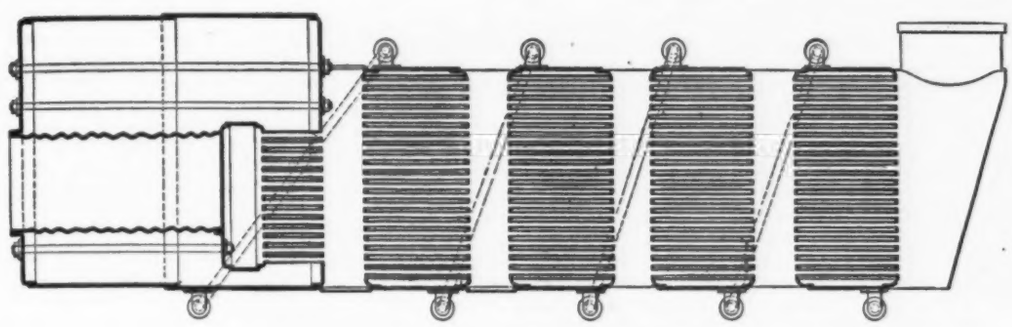
formed by a continuation of the main shell in the case of a traction or locomotive boiler, or may be temporary and detachable for stationary boilers, so as to permit access to the flue sheets or other internal parts. For stationary boilers these sections need not be placed with their ends opposite and in a horizontal position, as shown in the drawings, but may be superimposed one above another to form a vertical boiler, or placed side by side, the gases of combustion being conveyed by suitable conductors from one to the other.

The different sections are connected by the pipes, extending from the top of the last section to the bottom of the next, and so on in the same manner until the first or main section is reached, so that the feed water forced in at the pipe in the last section will pass from one to the other, its temperature rising in each, until the first or furnace section is reached and there be expanded into steam, either by the superior heat of this section or by latent heat absorbed in its passage through the supplemental sections. The pipes are connected from top to bottom of the several sections in the manner shown to accommodate the tendency of the water to rise as its temperature increases.

To convey an idea of the construction and general dimension we append the specification for a 400 horse-power boiler of this kind:

Furnace section 7 feet 4 inches diameter, 8 feet 9 inches long, to contain two Fox corrugated furnaces connecting with a combustion chamber, the same to be connected with back head by a set of 328 tubes 2¼ inches diameter. Outside shell and front and back heads to be ⅝ inch thick. Sheets in combustion chamber ½ inch thick. Tube sheets to be bored for tube holes, and all flat surfaces to be braced and stayed to safely withstand a working pressure of 170 pounds per square inch. Outside shell to be made up of two courses, secured together on circumferential seams by a double row of rivets 1 inch diameter. Longitudinal seams to have butt joints with double straps, one on outside ⅝ inch thick, and one on inside ½ inch thick, these straps to be double riveted on each side of butt with rivets 1 inch diameter. Heads to be secured in shell with a single row of rivets 1 inch diameter. The furnace section of boiler to be provided with a suitable dry pipe.

The four supplemental sections to be portable and interchangeable, 6 feet diameter and 3 feet long, each to contain 437 tubes 2¼ inches diameter, 36 inches long. Outside shells and heads to be ½ inch thick, made up of one course. Longitudinal seams to have butt joints with double straps, one on outside ½ inch thick and one on inside ⅜ inch thick; these straps to be double riveted on each side of butt with rivets ⅞ inch diameter. Intermediate baffling chambers between furnace section and first supplemental section, also between first and second supplemental sections, to be surrounded by bands, forming an inclosed annular air space as shown in drawings. Baffling chambers between second and third, also between third and fourth supplemental sections, to be surrounded by a simple band. The surroundings of all these chambers to be easily detachable to facilitate access to tubes and interchange of sections. All material in heads and shells of furnace section and supplemental sections to be homogeneous steel 60,000 pounds tensile strength.



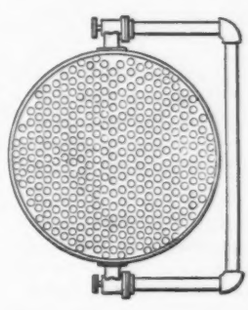
The Heald Progressive Sectional Boiler.

Secretary Windom does not propose to allow any jobs to be put up on the Government in the manner of the purchase of silver. The silver bill, he says, requires him to purchase 4,500,000 ounces of silver per month, if offered at its actual market value. Who is to determine that market price? Clearly the law imposes this discretion upon the Secretary of the Treasury. If the Government did not have the right to reject any bid, the Secretary of the Treasury would be compelled to purchase the silver at the owner's price, but the discretion is lodged in the Secretary to decide what is the market price. So, also, if he did not have the right to accept a portion of an offer one person might tender the whole amount which the Secretary is authorized by law to purchase.

Cultivating Chilian Trade.

A. Thompson Rei, a commissioner of the Chilian Government, for the purchase of agricultural machinery, school furniture, &c., was recently in Chicago, and, upon being interviewed by a reporter, spoke as follows regarding trade relations between his country and the United States:

We are directly accused of being partial in all our relations to England. Such is not the case, and I want to assure you now that my mission at this time to this country is solely in the interest of creating trade relations between this country and my own, although it is more at present in the line of machinery, implements for agricultural purposes and school furniture. We are now making great strides in our educational institutions, and there is a very great demand there now for the very latest American appliances for the comfort of our students in the many schools that are being established. I have placed an order for $15,000 with the Manitowoc Mfg. Company, in Wisconsin, and on my return home I shall make an exhaustive report on what I have seen and studied relating to the improvements in agricultural implements here in the West. The Western manufacturers are more enterprising than in the East, and I can get much better terms from them, and their goods are of later design. Many of the American inventions are especially adapted to our country, and I find quite a change in the ideas of doing business with our country from what there was five years ago when here. At that time there was an apparent disposition to be reserved and slow to attempt trade negotiations, but now I find the situation reversed, and a general willingness to open trade, which I attribute to the influence of the Pan-American Congress which has recently opened the eyes of the American manufacturers to the value of the South American trade and the necessity of a reciprocal treaty.

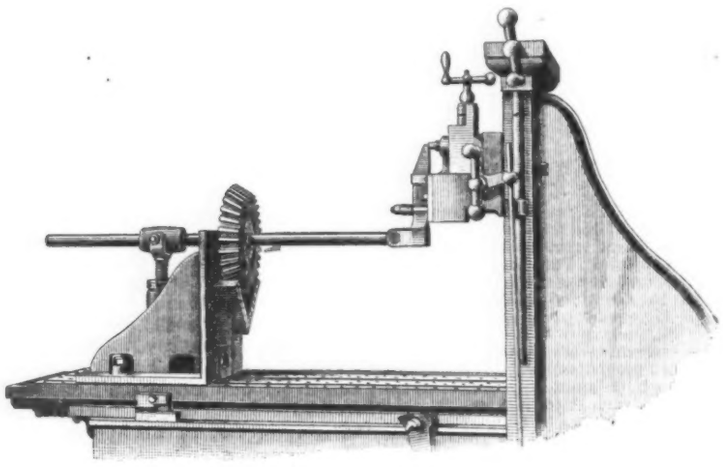


Section Through Tubes.

Guatemala is again tranquil. In Buenos Ayres, too, business is reviving. Salvador has vindicated her honor and is undergoing repairs.

Keyway Cutting Machine.

The accompanying cut represents an attachment to be placed upon a planer for rapidly and accurately cutting keyways. Its capacity is unlimited as to length of keyways to be cut. The work is always accurately set when placed in the center rest and can be raised and lowered at will to any required hight, and the outside bar support can be adjusted so as to reach the extreme hight of the angle plate. A keyway can be cut through very large work, equal in diameter to twice the hight of the angle plate. The angle plates are made with a tongue at the bottom to fit the central slot in the planer platen, thus securing accuracy. When not in use for cutting keyways the center rest can be taken off and the angle plate used for ordinary work, serving a double purpose. The bars carrying the cutting tool are made large and small and of any length required by the work. The bar is held in the planer as shown in the engraving, the work being moved to and fro by the planer platen. To set the attachment, the bar is passed through the bore of the gear or pulley



Keyway Cutting Machine.

which has been secured to the angle plates and through the outside support, when the planer is run up so as to connect the cutter bar with the tool block. The face of the cutter is then brought up to the bore of the work to be cut, and if it be a straight keyway the bar is set parallel with the planer platen and, the cutter being set the proper depth, the outside support is secured by means of the nuts at the top and bottom of the yoke. This tool is made by the Dunham Machine Works, of Danbury, Conn.

Shortening Ocean Travel.—The new shipping port in Nova Scotia, to be known as "Terminal City," and which is only a few miles from the present terminus of the Intercolonial Railroad, is regarded in Canada as a commercial center of much promise. Its railroad connections will be completed in November, and during the month, according to the scheme laid down, the first departure will take place of a regular steamship line for Europe. Being more than 800 miles nearer Liverpool than New York, it is claimed that the trip across can be made in three days or less. An Eastern writer says: "There is every reason to believe that Terminal City will also be the port from which will be shipped most of the productions of the Mississippi Valley and the West, coming by way of Chicago. Already some of the large beef and grain exporters of the West have seen the advisability of patronizing this port, and will ship their goods to the English market by way of Terminal City, just as soon as the necessary buildings can be erected, the first of which will be a grain elevator, to be built immediately." The productions of Nova Scotia, including bituminous coal and those of the mines and the fisheries, will more readily find a market.

SOUTHERN MISCELLANY.

The Morton Iron Works and the Kelly and Belfont Mills, of Ironton, Ohio, are largely interested in the steel plant recently mentioned in this correspondence as being in contemplation at Ashland, Ky., where $100,000 of the $400,000 capital stock has been subscribed. This bids fair to be an important enterprise.

Plans for the new malleable iron plant to be erected at Chattanooga, Tenn., by the Ross-Mehan Brake Shoe Foundry Company have been prepared, and the building will consist of two wings to the present plant, one 70 x 400 feet, the other 70 x 300 feet.

At Fort Worth, Texas, the Moore Iron Works Company have been incorporated by J. F. White, W. B. Manchester, C. E. Lee and others. The company have a capital stock of $50,000, with privilege of increasing same.

A syndicate composed of capitalists from the North and from Covington, Ky., are reported to have recently purchased the plant of the Newport Iron and Steel Works, of Newport, Ky.; the purchase money amounts to $150,000, it is stated. The new company propose enlarging and improving the plant to some extent, and will inaugurate a work of development that will give new life and vim to the town of Newport.

The Birmingham, Powderly and Bessemer Street Railway Company are reported to have decided to rebuild their machine shops at Bessemer, Ala.

The Dunlap Coal, Iron and Railway Company, previously reported in this correspondence as having been incorporated in Tennessee, have organized with J. H. Haffecker, of Wilmington, Del., as president; J. H. Russell, of Olustee, Texas, as vice-president, and C. F. Adams, of Jacksonville, Fla., as secretary.

A meeting of the stockholders in the North Alabama Furnace, Foundry and Land Company is called to meet at Florence, Ala., September 3, to decide the question of issuing bonds to create funds with which to operate their various interests.

The Watts Iron and Steel Company, of Middlesburg, Ky., have recently signed an agreement with J. P. Witherow & Co. for the construction of the large open hearth basic steel plant, already reported as contemplated by the former company. The price agreed upon was $539,000.

J. A. George is interested in a machine shop, 40 x 60, now being built at Rome, Ga.

The Jacksonville, St. Augustine and Halifax Railway Company intend establishing machine shops at St. Augustine, Fla.

It is reported that two iron furnaces and a number of coke ovens are to be erected at Crawfish Springs, Ga., by the Crawfish Springs Land Company.

E. T. Stewart, Washington, N. C., is erecting a building 27 x 124 feet for his machine shop, recently destroyed by fire.

The Midland City Land and Mineral Company, with $680,000 capital stock, have been incorporated at Mount Sterling, Ky., by R. H. Tomlinson, W. S. Millspaugh, J. N. Phipps and others. They propose building a new town, to be called Midland City, and intend erecting iron furnaces and developing iron deposits in that vicinity.

At Dallas, Texas, the University Plow and Implement Company have been organized, with $100,000 capital stock. They intend erecting a plant at once and will do a general business of manufacturing farm utensils.

The Florence Cotton and Iron Company, of Florence, Ala., have recently entered into a contract with the Smith & Sharp Mining Company, of Iron City, Tenn., to furnish 300,000 tons of iron ore within three years.

The Bluefield Iron Works, of Bluefield, W. Va., are erecting a new building, and will equip it with new machinery.

The Sewanee Furnace, at Cowan, Tenn., it is reported, will shortly be put into active operation by the Tennessee Coal, Iron and Railroad Company, of Nashville, Tenn.

A movement is on foot at Parkersburg, W. Va., looking to the establishment of a nail factory.

On account of inadequate room the Lookout Rolling Mill, of Chattanooga, will build a new plant at Harriman, the new iron town of Tennessee, whose development company are now presided over by ex-Postmaster General James, of New York, who was recently elected to fill the vacancy occasioned by the death of Gen. Clinton D. Fisk. The new plant will be considerably larger than the old one, and will be equipped with the most improved machinery.

Something of a ripple has been created at Sheffield, Ala., over a rich iron find at Russellville, in the vicinity of that city, on property owned by English parties. New railroad sidings are being constructed as rapidly as men and money can do it. The present output from these mines is 600 tons per day, all of which is used by the two Ensley furnaces, at Sheffield. These plants require 800 tons per day, and the owners of the mines at Russellville hope to increase their output of ore sufficiently to supply the entire amount needed by these two furnaces.

Although the Rollstone Machine Works, of Anniston, Ala., have hardly more than gotten well started, they are said to be overwhelmed with orders.

The De Loach Mfg. Company, of Atlanta Ga., are building a new foundry and machine shop, 400 x 70 feet.

Some very fine low in phosphorus ores are being shipped to the furnaces of the Woodstock Iron Company, at Anniston, Ala., by the Wenoka Mining Company, of Alpine, Ala. The No. 3 coke furnace of the Woodstock Company, which was recently shut down for repairs, is again in blast. This company are said to be behind their orders for coke and foundry irons.

Ground was broken a few days ago for the new furnace at Attalla, Ala.

Chattanooga plows are finding their way into Mexico in large quantities. The Chattanooga Plow Works have been shipping some large orders to that country recently. This concern are now building a large stone addition to their storage warehouse, which they expect to get into by September.

The Sheffield Boiler, Foundry and Iron Works, of Sheffield, Ala, have contracted with R. C. Gilbert, of the Phœnix Iron Works, Terra Haute, Ind., for the erection of five buildings of iron and brick, into which the most modern machinery is to be placed.

By the last of the month the new iron town of Piedmont, Ala., that has been built up by capitalists from Wilmington, Del., and Anniston, the nearest neighbor, expects to have a foundry and machine works in full operation. The building is about finished and some of the machinery is in position and some in transit.

The United States Rolling Stock Company, of Anniston, Ala., made an excellent record during the year which recently ended, as the following exhibit will show. They produced in their different departments:

	Pounds.
Puddled iron	6,712,163
Merchant iron	46,472
Bar iron	10,274,263
Shaped forgings	16,885
20,797 axles	8,734,740

The Dickson Car Wheel Company, of Houston, Texas, have placed their order for an additional cupola of 50 tons capacity.

The manufacture of engines is to be engaged in at Birmingham, Ala., by Carl Jensen, of Hartford, Conn., and H. A. Haralson, of Florence, Ala.

Cincinnati parties are said to have in contemplation the establishment at Sheffield of a plant for the manufature of lathes and other

machinery. The only obstacle reported is the absence of a foundry at Sheffield from which the proposed plant could obtain its castings.

The South Pittsburg Pipe Works have put on a night force recently, in order to catch up with orders.

A committe from the Birmingham Chamber of Commerce is to scrutinize the operations of the Henderson steel making process, now being employed in that city by the Henderson Steel Company. On the committee are I. Meyer, a steel expert from Ohio; W. H. Hassinger, president of the Alabama Rolling Mill, and F. Fulcher, chemist for the Tennessee Coal and Iron Company. The result of these gentlemen's investigation and their decision will have great weight in deriving a final conclusion as to the practical value and utility of this much talked of process.

PROVIDENCE NOTES.

The United Electric Traction Company, of New York, have made a successful trial of their new car on the lines of the Union Railroad Company, of this city. The car is of the same pattern as those run for a while on Fourth avenue, New York, and is very comfortable. Power is applied by two Thomson-Houston motors, and the car floor is one step above the platform. There are two iron folding gates at each end of the car. The car is lighted by six 16 candle-power incandesent lamps, and weighs 7 tons with all its appurtenance. The motors are 10 horse-power each, and are wound for 250 volts. Underneath the seats on each side of the car there are six trays of cells and nine cells in each tray, making 54 cells on each side and 108 in the car. By what is called the elevator system, the cells may all be removed from the car on the outside and another set substituted in the space of one minute.

The old Boston and Providence was one of the first railroads in this country to use heavy locomotives for suburban passenger service, and its example was quickly followed by many Western roads with a heavy local traffic. The Class I engines of the Chicago, Burlington and Quincy Railroad, of a total weight of 115,000 pounds, have 94,000 pounds on the drivers, which is said to be a greater weight than is carried on the drivers of any other engine built for suburban traffic. The wisdom of this practice is, it is held, becoming apparent, as one can predict with certainty the maximum load that may be placed behind one of these engines. LEONIDAS.

To Aid Poor Inventors.

Several of the most prominent and influential citizens of Hartford, Conn., have established the Board of Trade Room and Power Company, and have raised $100,000, this amount having been subscribed by citizens generally. A large tract of land on Capitol avenue and Woodbine street, and extending through to Park River, has been purchased. A building committee has been appointed to erect on this land a substantial brick and stone building 350 x 45 feet and four stories high. The building will be divided into rooms as may be deemed advisable, and will be provided with power in each room. These rooms will be leased at a low rental to deserving parties who wish to develop small enterprises economically. If the first building proves successful others will follow. The scheme has not been started with the aim of paying large dividends to the stockholders, but it is expected to pay a reasonable return. The officers of the company are Geo. A. Fairfield, president; Geo. H. Day, vice-president, and P. H. Woodward, secretary and treasurer. The directors are Geo. A. Fairfield, president and treasurer of the Hartford Screw Machine Company; Francis Pratt, of the Pratt & Whitney Company; Geo. H. Day, general manager of the Weed Sewing Machine Company; Ernest Cady, secretary and treasurer of the Pratt & Cady Company; J. M. Allen, president of the Hartford Steam Boiler Insurance Company; C. C. Kimball, of the firm of C. C. Kimball & Co.; Thos. O. Enders, president of the United States Bank; Robert W. Nelson, president of the Thorn Type Setting Machine Company, and P. H. Woodward, secretary of the Hartford Board of Trade. A glance at the above list makes plain the fact that the affairs of the new company will be conducted fairly and impartially, and that the interests of both the inventors who may take advantage of the aid offered them and of the stockholders will be equally well attended to.

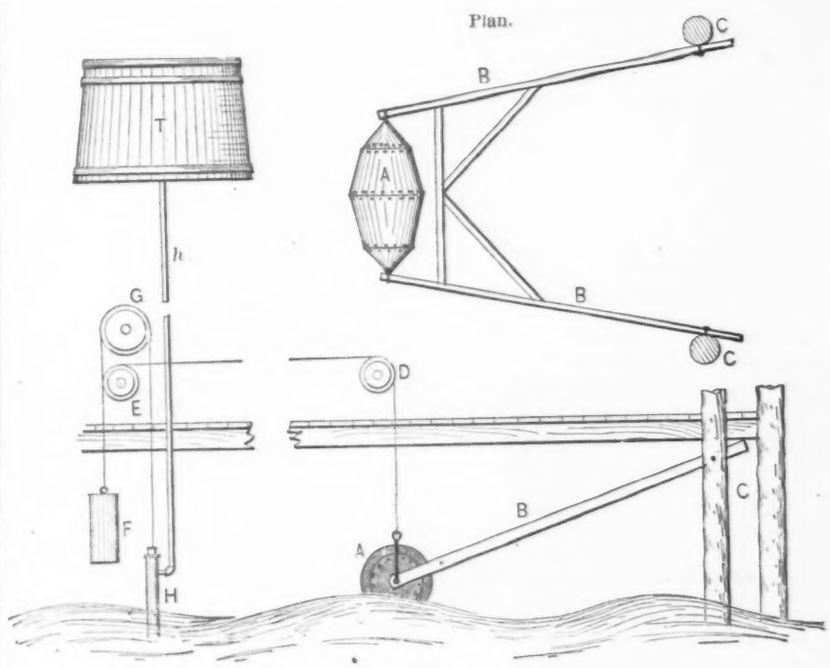
We now come to the object aimed at by this company. In a word, the desire is to establish what we may properly term an experimental station, where the man having an undeveloped idea relating to machinery of any description, but having little money, can obtain for a nominal rental the use of such tools as he may need to enable him to practically demonstrate the good points of his improvement. Should it be thought desirable to place the improvement on the market, an endeavor will be made to obtain the required capital. This work will be done by the members of the company and by members of the Board of Trade individually, since the company is only formed to foster the mechanical and not the financial part of the scheme. In this way some new industries may be brought to Hartford and some of the established ones may be benefited. It will sift out and retain those enterprises having merit. The method of making the first selections and afterward of patenting and pushing the invention and of justly treating with the inventor will be decided upon when the time comes. It is not expected that every idea experimented upon will prove successful, but it is expected that the plan will bring out many ideas of real worth, and that it may produce results of great importance.

A committee of the Amalgamated Association of Iron and Steel Workers of Pittsburgh, in charge of William Martin, secretary, and James Nutt, of Youngstown, Ohio, were in Washington on August 4 and 5, and held long conferences with Senators Quay, Sherman and Aldrich. The committee's object was to point out the evil effects on labor, which may be expected to be brought about if the Senate Committee's reductions in the metal schedule of the House Tariff bill are adopted. The members of the Amalgamated Committee expressed themselves as well satisfied with their reception, and are hopeful of good results from their visit.

Wave Motor.

Last season the wave motor at Ocean Grove, N. J., attracted much attention. This consisted of a thick wooden blade, strongly built, and measuring about 5 feet wide by 8 feet long. The blade was hung from pivots at its upper corners between two piles of the dock, and was free to be swung to and fro by the waves. Projecting from the upper edge was a rod, so connected as to operate a pump which elevated water (salt) to a tank, from which it was delivered to carts for sprinkling the streets.

The water motor of which we herewith present drawings has been recently erected near the other, the two motors having no features in common. The old one depends for its action upon the progressive action of the waves, which swing the blade, while the new one depends upon the rise and fall of a float acted upon by the waves. The frame B is pivoted at one end between the piles C C, and at its other end it carries the float A, which is, of course, free to rise and fall with the waves. From the float extends a wire rope, passing over the sheave D and sheave E, and having the weight F secured to its end. Attached to this rope is a second one, which passes over the sheave G and operates the plunger of the pump H, the water being delivered to the tank through the pipe *h*. The float weighs 2500 pounds, the weight 2000 pounds and the tank has a capacity of 12,000 gallons. As the float rises on a wave, the counterbalance weight descends and lifts the pump plunger, which performs the return stroke by its own weight, as the counterbalance is lifted by the fall of the float. The pump has a bore of 6 inches and a stroke of 6 feet. Allowance is made for the rise and fall of the tide by changing the length of the rope leading from the weight to the plunger. It was stated that with waves of medium size the motor would fill the tank in about seven hours. It is expected to so modify the general arrangement as to make the pump double-acting. Provision is made for lifting the float entirely out of the water when the waves are running unusually high.



Wave Motor.

Air Lift Pump.

A recent paper read before the Technical Society of the Pacific Coast by Ross E. Browne and Hans C. Behr describes some tests made by them of the so-called air lift pump devised by Dr. J. G. Pohle, of San Francisco. The accompanying drawings show the simplicity of the pump. The pump column is an open pipe partly submerged in the water to be pumped. A small pipe leading from an air receiver to the foot of and a short distance into the pump column delivers compressed air, which forms in piston like layers, and rising rapidly in the column does the work of pumping. The water is discharged in alternate layers with the air. The apparatus tested was erected without due regard to best dimensions, and it is deemed proper to state that the efficiencies found could have been increased by a few simple alterations. Pipes of different diameters were not provided, and the experimenters were able to change only the length of the pump column, the amounts of submersion and lift and the pressure in the receiver; hence the quantity of air supplied. The diameter of the pump column was 3 inches, of the air pipe 0.9 inch, and of the air discharge nozzle $\frac{5}{8}$ inch. The air pipe had four sharp bends, and a length of 35 feet plus the extent of the submersion. The water was pumped from a closed pipe well (55 feet deep and 10 inches in diameter), and was discharged into a tank and delivered—over a quadrantal weir—back to the well. A long mercurial column was connected with the receiver for the purpose of obtaining accurate measurement of pressure.

Two methods of ascertaining the quantity of air delivered to the pump were adopted. By the first method, the cubic contents of the receiver were measured. The escape cocks from the receiver were closed and the compressor was started. Begining with atmospheric pressure, the increase of pressure was noted for each 30 strokes of the compressor piston, until a pressure was reached beyond that required in the pump tests. The contents of the receiver was 117 cubic feet. The compressor made uniformly one stroke per second. The atmospheric pressure was 2.51 feet of mercury. The air was unusually dry. The data obtained formed the basis for calculating the number of pounds of air delivered per piston stroke of the compressor to the receiver at any required pressure. An average of the results of the two tests was adopted. The following table gives the values obtained:

Pressure receiver, pounds per sq. inch	0	5	15	25	30	35	40
Pounds of air per stroke	.104	.098	.088	.081	.079	077	.076

The second method, Fig. 3, adopted was as follows: A small auxiliary chamber, B, was attached to the receiver. Compressed air entering this chamber escaped into the atmosphere through a carefully measured circular orifice in thin plate. After a pump test had been completed, the compressor was kept running, cock C was closed and cock A opened and adjusted until the conditions in the pump test, regarding number of strokes of compressor per minute and the pressure in the receiver, were repeated and maintained. The pressures and temperatures of the compressed air in chamber B and of the atmosphere furnished the data upon which to base a calculation of the quantity of air escaping through the circular orifice. This quantity was evidently the same as that supplied in the pump test. Such tests were made from time to time, and served to check the values taken from the table given above. The engine used to drive the compressor was built for ten times the power actually applied to the compressor; hence a test of the efficiency of the entire plant was not made.

In the paper referred to an extended table is given of the pump tests, for which we have not space. The writers say: The "efficiency of the pump" is based upon the least work (L, Fig. 4) theoretically required to compress the air and deliver it to the receiver. The values given in the table take no cognizance of the losses of power in the engine and compressor. If we assume the efficiency of a suitable compressor to be 70 per cent., the efficiency of the pump and compressor together would be 70 per cent. of that given in the table for the pump alone. An inspection of the table shows: 1. That for a given submersion "h" and lift "H" the best efficiency was obtained when the pressure in the receiver did not greatly exceed the pressure due to the submersion. [This was only true when the ratio $\frac{H}{h}$ was kept within reasonable limits —*i. e.*, where H was not much greater than h.]

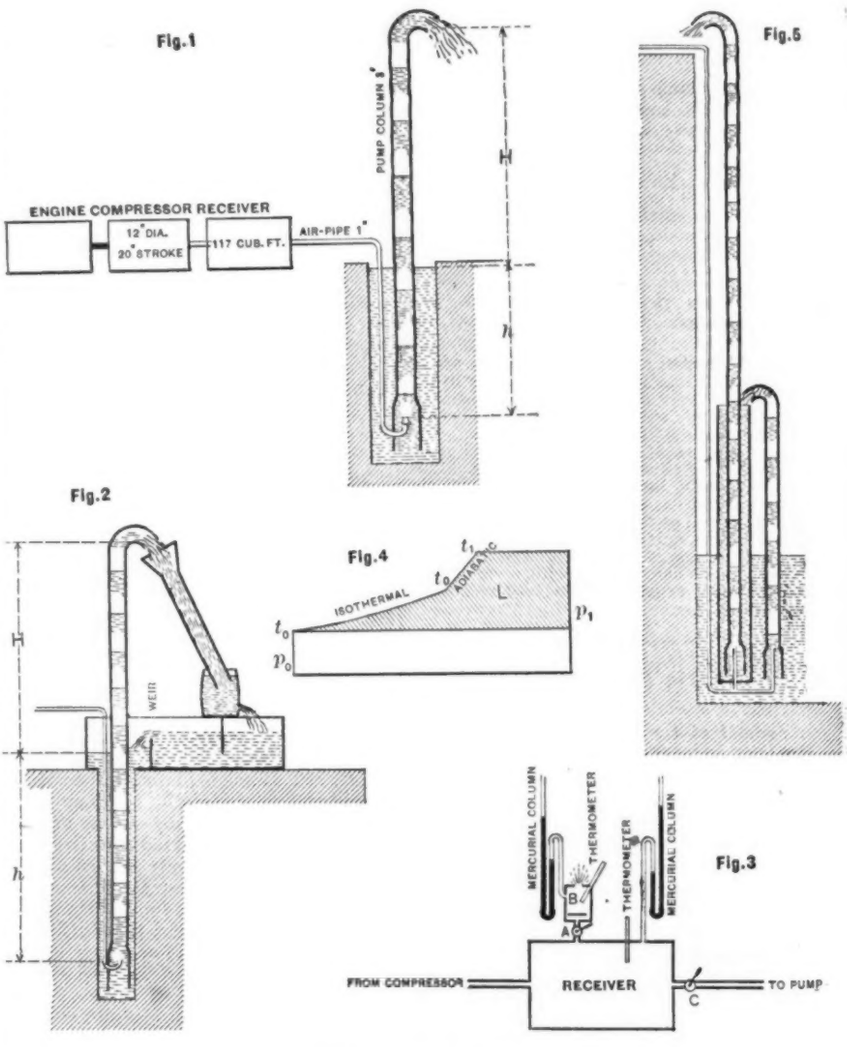
2. That the smaller the ratio $\frac{H}{h}$ the better was the efficiency.

We may say in a general way that under the better adapted pressures in the receiver, the pump, as erected, showed the following efficiencies:

	Per cent.
For $\frac{H}{h}$ = 0.5	50
" " 1.0	40
" " 1.5	30
" " 2.0	25

It is apparent that the air pipe should not have been reduced at the discharge end, as such reduction necessitated a greater pressure in the receiver for the delivery of the air to the pump. Unfortunately, says the *Mining and Scientific Press*, from which we quote, the data is wanting for a reliable estimate of the loss due to the frictional resistance in the small air pipe. A rough estimate shows that such loss must have been large. The substitution of a 1½-inch air pipe in place of the 1-inch would have appreciably augmented the efficiencies given in the table. In justice to the pump a considerable allowance should be made for this easily avoidable loss.

The last test shows a limit of lift for a given submersion, beyond which a large excess of pressure is required to pump even an insignificant quantity of water. For good efficiency it becomes necessary that the lift should not be very great as compared with the submersion. Where a shallow sump only is available to pump from, and a considerable lift is to be made, Dr. Pohle introduces an auxiliary pipe, Fig. 5, to receive the water, after being pumped to a small hight, and act as pump well for a higher lift. No attempt has been made toward an analytic treatment of the action of this pump, but its simplicity commends it for many purposes. Among the numerous applications proposed for this air lift may be mentioned: The draining of mines, the supply of water from deep wells, the lifting of liquids which damage the working parts of pumps ordinarily used, the increase of lift and capacity of other pumps by introducing an air jet into the pump column.



Pohle's Air Lift Pump.

THE WEEK.

The dividends paid by the cotton manufacturing corporations of Fall River during the past quarter make a better showing than was anticipated, but the total is hardly half what was paid the previous quarter or in the corresponding quarter of 1889. The 25 making dividends paid $247,650 on a capital of $13,560,000, or an average of $1\frac{88}{100}$ per cent. For the first quarter of this year the rate was the highest ever known, 32 corporations paying $2\frac{74}{100}$ per cent., or $487,560 on a capital of $17,933,000.

The stream of German immigration to South Australia never ceases. There are already from 30,000 to 40,000 of the Teutonic race at the antipodes, where the country for many miles is dotted with German farms. Attention is given more to vine growing than to the raising of grain.

Raisin growing in California has become an important industry, defying competition. In the last four years the development has been very rapid. In 1889 the total product was 32,678,000 pounds, and this year it will probably reach 45,000,000 pounds, as something like 10,000 acres of new vineyards are in bearing. The returns from a vineyard come very quickly. The second year a fair crop may be gathered from rooted vines, and the third year from cuttings. A year or two later the vineyard is in full bearing. There are cases on record of more than $50 worth of grapes being taken from an acre of vines that had been in the ground only a year and a half.

Workmen in the malleable iron foundry in Bridgeport last week found it necessary to endure a heat of 190° when they approached within 4 feet of the furnaces. The mercury in a tube placed there rose to the full length of the dial. There were several cases of prostration, none of them serious.

Three engines built at the Baldwin Locomotive Works for the new railroad from Jaffa to Jerusalem have been shipped to their destination. This road is said to be the first one ever constructed in Palestine, and is being built by a French company for the Ottoman Government.

A corner in carbon points is spoken of as possible. There are four carbon manufactories in Cleveland, Ohio, where about 70 per cent. of the total production of the country is made. The Thomson-Houston Electric Light Company control the Brush Electric and the National, the latter having recently changed hands, and negotiations for the possession of the Standard are said to be in progress. Besides, there is the Globe Company. These four concerns manufacture 50,000,000 of the 90,000,000 carbons annually consumed in the United States.

Three expert oil drillers from Pennsylvania left New York for India, to join about 40 American drillers and rig builders who are already on the ground.

The lumber trade with South America has been seriously curtailed at all points in Montreal, as in New York, by the troubles in Buenos Ayres.

The order of the New York Health Board to provide separate receptacles for garbage and ashes cause an extra demand for metal cans.

The Canadian Pacific Railroad is perfecting its connections with the principal American lake ports by purchasing the Duluth, South Shore and Atlantic and Minneapolis, Sault Ste. Marie and Atlantic railroads. The distance by these oads in connection with the Canadian Pacific from Duluth or St. Paul to Boston or New York is understood to be about 150 miles shorter than by way of Chicago. Traffic from the West to Duluth over the Great Northern and from all the Western roads coming to St. Paul will go to these roads and reach the eastern coast over the Vermont Central, the terminal of which is Boston. The deal is deemed to be a most important and significant one.

A new coal road 100 miles long has been projected, to be known as the Pennsylvania, Lehigh and Eastern Railway, Joseph Pool, of New York, president, which will tap the Lehigh and Wyoming coal regions and form a direct route to the New England States via the Poughkeepsie Bridge. It connects with the Pennsylvania near Hazleton.

Argentine immigration declined from upward of 100,000 during the first four months of 1889 to 59,000 in the corresponding months in 1890,

The labor organizations in their attempt to establish an eight-hour day started off with a carpenters' strike. Boston, as well as Chicago, was much affected, and, in consequence, much contemplated building was indefinitely postponed. The Boston *Herald* says, the result reached by the journeymen carpenters in that part of the State has not been equal to their expectations as announced before the 1st of May. Though, out of 2000 persons who demanded the eight-hour day, with the pay to correspond, 1700 have secured what they asked for, the builders, or contractors, have not yet accepted the eight-hour day as a business fact. The striking carpenters have carried their point mainly with builders not associated together, and the eight-hour day is yet to be agreed upon between the workmen and the associated employers.

A recent visitor to the factory of A. B. Farquhar, of York, Pa., found his shops working, among other things, on a single order for 25,000 plows for the Argentine Republic. He said that since we had excluded mestiza wool and thrown the whole product upon Europe the price had been depressed, and this had led the Argentine people to plant grain. They find that the great plains on the Parana River, on which the pampas grass has been pastured by sheep and cattle for so many years, is extremely prolific when planted in wheat. Great areas are now being turned up and plows are wanted to do the work.

The largest sawmill in the world is at Christiana, in Norway, and is owned by one man. It runs 36 gang saws. From 40 to 50 ships load at one time at its docks. The same man owns two large flour mills. The lumber yard of this mill extends more than a mile.

Texas claims to have solved the labor question by importing negroes from North Carolina and working them on shares growing cotton. Each man must cultivate at least 10 acres.

Findlay, Ohio, of natural gas notoriety, is now enjoying an oil boom. A 60-acre farm was recently sold for $64,000. Gas, too, is doing well. A pipe line to Detroit, 103 miles away, is worked without pumping stations. The force is enormous.

Boston's total assessed valuation is $822,000,000, an increase of $26,600,000 over 1889.

A leading Chicago paper is apparently trying to "smoke out" a number of large manufacturing establishments in that city, which are said to do "a large export trade" in smoke and smells. Rival cities will welcome the refugees.

Major Wissman is buying machine guns for the civilization of Africa.

The Builders' Trade School, of Philadelphia, will soon be opened in the basement of the Exchange Building, which will be occupied until a suitable structure can be had. Prospectuses of the school are now being mailed to every builders' exchange and architect throughout the country and to all the applicants, who already number about 200. The general superintendent will be assisted in his work by seven qualified assistants, each presiding over a department, and each an expert in his own particular trade. These are to be selected by the various sub-committees of the several trades. An interesting fact in connection with the school lies in the statement that the members of the exchange hereafter purpose to select their apprentices exclusively from the graduates of the institution, and to interest themselves personally to get all positions. As the prospectus fittingly quotes: "There exists a demand for instruction in the mechanic arts from a class of young men who have hitherto been practically excluded from the trades; young men who have been kept at school, as every lad should be, until 16 years of age or over. This demand comes from every part of the United States. These young men are too old and unfitted by education to do an errand boy's work, but the trade school gives them the opportunity to become mechanics. It is through this class of young men that labor is to be elevated and the mechanic made peer with the professional man." The fee charged will be only sufficient to meet actual expenses.

At Columbia River, Oregon, as in British Columbia, the catch of salmon this year is large.

One match machine can cut 10,000,000 matches in a day.

Lake cities are expecting to do a large direct trade with foreign ports under the new tonnage bill, assuming that it will become a law. The policy of the Canadian Government is to create a like depth of water in all the St. Lawrence canals. Between the Lachine Canal and deep water in Lake Ontario there are five canals—the Beauharnois, $11\frac{1}{4}$ miles long; the Cornwall, $11\frac{1}{2}$ miles; the Farran's Point Canal, $\frac{1}{4}$ mile; the Rapide Plat Canal, 4 miles, and the Galops Canal, $7\frac{1}{2}$ miles. These canals overcome the rapids in the St. Lawrence River. In these canals there is now only 9 feet of water. E. L. Corthell, a Chicago engineer, recently examined the St. Lawrence canals in the interest of Western shippers who desire to open up through trade between Chicago, Duluth and Montreal, and reports that these canals can easily be deepened so as to afford 20 feet of water, corresponding to the depth of American waterways and harbors.

British importations of cattle from the United States in the first six months of 1890 amount to $18,757,000, as compared with $28,967,000 during the whole of last year. A proposition to prohibit importations was rejected by the Government.

The sale of the San Jacinto tin property in San Bernardino County, Cal., was completed last week by the first payment of $350,000 cash through the Bank of California, and the deed was delivered to the purchaser, the San Jacinto Estate Company, of England. The property consists of nearly 50,000 acres south of Riverside, in San Bernardino County.

The "Great West" is not all a paradise for agriculture, as the experience of a few years has served to demonstrate. The St. Louis *Globe-Democrat* says: "The fact may as well be acknowledged that the whole country west of the Missouri River is more or less subject to drought. In fact, a year never passes without a drought in some part of that great expanse of

prairie. . . . They raise remarkable crops when they have sufficient moisture, but the moisture is not to be depended upon in any regular way. . . . In short, the sober truth is that agriculture in that section of the country, however feasible and productive in exceptional years, is not free from serious peril of drought, taking one year with another." If the truth were told it would appear that many a disappointed New Englander would gladly reclaim the deserted farm in the East, if resources were not too much exhausted to make it possible.

The official rough count, as announced by the Census Bureau, shows the population of Chicago to be 1,098,576. This is an increase during the decade of 595,391, or 118.32 per cent. This shows that Chicago has a population of about 53,682 in excess of Philadelphia, and is therefore the second city in population in the United States. Philadelphia's increase was 23.25 per cent.

The Boston Towboat Company succeeded in raising the coal barge Atlas, formerly the iron ship Lornty, which struck a rock and sunk off Hyannis last January. A portion of the coal was recovered by means of centrifugal pumps. The hull was made tight, excepting as holes were made in the hatches, one for the suction hose and the other for the air pipe, so that air could replace the water taken out. Three wrecking lighters with their six pumps got to work and floated the vessel, but not until after much delay and disappointment from various causes.

National and State Debts.

The Census Superintendent has made a very prompt report of the debt of the United States and of the several States in 1880 and 1890—a statement that affords good evidence of the general prosperity of the country. The total bonded and floating debt of the United States and the several States in 1880, less cash and funds on hand, was $2,127,017,999. It was reduced in 10 years $1,071,305,190, or more than one-half, and now stands at $1,055,712,808. By far the larger part of the debt is that of the United States. The net debt of the several States is now $132,336,689, being $72,163,985 less than in 1880. The great bulk of the State debts is owing by the Southern States. The Eastern and Middle States together only owe about $12,500,000, and this is more than offset by the excess of assets over debt in those groups of States. Vermont, Rhode Island, Massachusetts, New York and New Jersey have no net debt, but, on the contrary, assets beyond the debts; Pennsylvania owes only $1,783,020. Altogether there are 20 States in the Union with assets beyond their debts. The showing is favorable in every part of the country except in the States that formed the Southern Confederacy. Nearly all of these have heavy State debts, which, it is true, have been reduced $28,000,000 in 10 years, but only by the enforced refunding of the old debt into new at a discount varying from 25 to 80 per cent. Four States that had a net debt in 1880 show assets beyond their debts in 1890, and seven an increase of net indebtedness. Of the latter four are Southern, two Western and one (Delaware) of the Middle States group.

The lake shipments of iron ore are on a prodigious scale. Up to July 30 the total was: 4,033,595 tons, a gain of 699,129 tons over last season, which had no parallel until this year. The increase would have have been larger but for the lack of charters and the fears that the mines will be unable to fill their sales contract during the shipping season.

MANUFACTURING.

Iron and Steel.

The partnership heretofore existing between W. D. McKeefrey and W. D. Hoflus, under the firm name of McKeefrey & Hoflus, proprietors of the Seneca furnaces, at Leetonia, Ohio, has been dissolved by mutual consent. The business will be continued by Mr. McKeefrey under the firm name of McKeefrey & Co.

In the matter of the advance in the wages of the millwrights and engineers in the employ of Jones & Laughlins, Limited, proprietors of the American Iron and Steel Works, at Pittsburgh, a settlement was effected on Wednesday, the 6th inst. The men concerned were the blooming wipers, boiler tenders on the tunnel line, the engineer on the Corliss engine on mills Nos. 5 and 6, the engineers in the bolt factory, on No. 10 shears, the skull cracker, all the yard engineers, the engineers on the small engines on the 26-inch mill, and the engineers on mills Nos. 3 and 8. The men were granted an advance over last year's wages which will average about 3 per cent.

The strike at the works of the Carbon Iron Company, at Pittsburgh, remains about the same as was noted in our issue of last week. The mill is closed down and repairs are being made in the finishing departments. The firm have declared their intention of starting up with non-union men as soon as repairs have been completed.

The Mahoning Valley Iron Company, proprietors of the Hannah Furnace, at Youngstown, Ohio, will blow the furnace out at an early date, for the purpose of making some extensive repairs. Fire brick hot blast stoves will be built to take the place of the present iron stoves, and a new stock house will also be built.

On Friday, the 8th inst., the output of finished rails at the plant of the Allegheny Bessemer Steel Company, at Duquesne, Pa., was 501 tons. This is the largest output for one day in the history of the plant.

The jury in the case of Cofrode & Saylor, of the Philadelphia Bridge Works, at Pottstown, Pa., *vs.* Brown, Howard & Co., returned a verdict in favor of the plaintiffs at Detroit, Mich. The case grew out of a dispute over the contract for building 54 miles of the Duluth, Lake Shore and Pacific Railroad, in the Northern Peninsula. Cofrode & Saylor were the sub-contractors for building the road, and the suit was brought for nearly $800,000.

The Youngstown Iron and Steel Company have been incorporated at Youngstown, Ohio, with a capital stock of $600,000. The new corporation is a combination of the Youngstown Steel Company, the Trumbull Iron Company and the Youngstown Rolling Mill Company under one management. It is intimated that one result of the combination will be the erection of a large steel plant in Youngstown during the coming year.

On Monday the 11th inst. the blast furnace of the Belmont Nail Company, at Wheeling, W. Va., completed the third year of its present blast and is still in good condition. All the other departments of the plant of this firm are idle at present, the nail factory for want of nail plate, which cannot be secured until the plant of the Wheeling Steel Works is put in operation, and the mill proper by reason of the repairs being made in that department.

Of the numerous charcoal pig iron furnaces which once were active in Kentucky only one is now running—namely, Bellefonte Furnace, in Greenup County. All the others have been abandoned. Hunnewell Furnace was blown out last February and has been dismantled. A new charcoal furnace is now under way at Cumberland Gap.

Spearman Furnace No. 1, of the Spearman Iron Company, at Sharpsville, Pa., was blown out last week on account of the lining falling in. Stack No. 2 was immediately blown in and will be operated while repairs to No. 1 are being made.

The works of the Columbia Iron and Bridge Company, at Dayton, Ohio, have been sold at sheriff's sale to Carnegie, Phipps & Co., Limited, of Pittsburgh. The purchasers had a claim against the company for $45,000. There were other claims aggregating about $10,000. L. C. Phipps was the bidder, and said the works would probably be dismantled.

The Harvey Steel Car Company, of Chicago, have placed contracts for the erection of their buildings at Harvey, a new manufacturing suburb of the city. The officers of the company hope to begin the manufacture of cars by October 1, and to have 1000 men at work at that time. A number of other manufacturing establishments have already been attracted to Harvey from points in the West, and the announcement is made that the Kalamazoo Spring Company, the Hicks (Oshkosh) Lock Company, the Owatonna (Minn.) Feed Mill Company and the Keokuk Wind Engine Company are also seeking sites in the vicinity.

The Iroquois Furnace Company have taken out a building permit for the erection of a blast furnace at South Chicago, Ill., and work will shortly be commenced on it. The members of the company are Youngstown and Pittsburgh capitalists. The leading spirit is S. Frank Eagle, of Youngstown. Plans have been prepared for one furnace, but it is expected that others will be added after the first is started. The site is a desirable one, as ore vessels can discharge their cargoes at the company's own docks, while railroad connections are equally convenient.

John S. Kennedy, superintendent of the Ensley Division of the Tennessee Coal and Iron Company, informs us that all of the four Ensley furnaces are now in blast, No. 1, which has been relined and just remodeled by Mr. Kennedy, having been blown in on July 27. It is averaging 140 tons daily, using exclusively the red ores of the district.

The large stables connected with the Thomas Iron Company, Hokendauqua, Pa., were recently destroyed by fire, together with nine horses and stock belonging to the company. The loss will reach $35,000; insurance, $1300.

The Rome (Ga.) Rolling Mill was sold at receiver's sale, on the 5th inst., for $38,500. The purchaser was Col. R. T. Armstrong, who is said to be acting as agent for a syndicate, who will increase the capital stock to $100,000.

It is reported that a syndicate of English capitalists, having a capital stock of $1,250,000, has bought the Cumberland Iron Works, comprising 46,000 acres of land in Stewart County, Tenn.

The Ashley Wire Company will locate at Joliet, Ill., employing 300 hands. Work has been commenced on the new plant, which will be ready for business late in the fall.

The Spaulding Iron Works, at Brilliant, have been reappraised at $90,000 and will be offered for sale again September 2.

The Davis-Colby Ore Roaster Company, of 28 Platt street, New York, report that they are now erecting ore roasters at the following furnaces: Cornwall anthracite furnaces, Lebanon, Pa., two roasters, in addition to three previously erected; five at the Colebrook furnaces, of the same place, making eight roasters at this plant; one at Chickies Furnace, Chickies, Pa.; three at Emaus Furnace, Emaus, Pa.; one at the Cumberland Gap Furnace of the Southern Iron Company, and three at the Croton Mines, N. Y.

Efforts are being made at Duluth to raise a bonus of $250,000 for the location of a steel plant at that point, Lovett & Brown, of Duluth, having the matter in charge.

Machinery.

The Weimer Machine Works Company, of Lebanon, Pa., have received an order from the De Bardeleben Coal and Iron Company, Bessemer, Ala., for six patent liquid cinder cars; from the Tennessee Coal and Iron Company for two cars for Cowan, Tenn., and six for South Pittsburgh, Tenn. The company have also received an order from the Detroit Iron Furnace Company, of Detroit, Mich., for one 30 x 72 x 48 inch poppet valve blowing engine. The enlarging of the company's machine shop and foundry, which will double their capacity, is about completed.

The Valley Engine Company, of Williamsport, Pa., who are to move to Lynchburg, Va., by the end of the year, report good progress in the erection of their buildings at that place. The main machine building will be 50 x 240 feet, one story. It is to be of brick and fitted with a traveling crane that will reach every part of the building, and having a capacity to lift 20,000 pounds. The warerooms will be 50 x 50 feet, also of brick, and the pattern store will be 40 x 80, two stories, also of brick. The foundry will be 55 x 110 and the forge shop will be 27 x 48 feet. A 75 horse-power engine, of their own make, will be used, and 100 horse-power boilers will be set. W. P. Riley, the principal proprietor of the present works, will be put in management of the new concern, which will be known as the Valley Engine and Machine Works. The capital stock of the new company is $150,000, all paid up. W. C. Riley, son of the manager, will be put in charge of some important department,

so that the entire ability of the old Williamsport concern will be transferred to Lynchburg. The capacity of the new works will be greatly in excess of the present plant.

At a meeting of the stockholders last week of the Almy Water Tube Boiler Company, Providence, R I., it was voted to make the capital stock $20,000 in shares of $100 each, par value. The following officers were elected: President and treasurer, Darwin Almy; vice-president and secretary, David D. Spence; superintendent of works, Frank D. Almy; directors, Darwin Almy, Frank D. Almy and David D. Spence.

The International Boiler Company, of New York and Pitisburgh, have recently secured several large orders for their patent boiler, among them being one for 800 horse-power for shipment to Bridgeport, Ohio; one of 1000 horse-power to go to Akron, Ohio, and one of 250 horse-power for Zanesville, Ohio, besides numerous orders on hand for Pittsburgh and New York.

The Hercules Iron Works, of Chicago, have completed the erection of their buildings at Aurora, Ill., and will soon have the machinery in place. The buildings are very substantial structures, composed of brick and stone, and comprise a machine shop, foundry and office. They are located along the tracks of the Chicago, Burlington and Quincy Railroad, near the stove foundry of Rathbone, Sard & Co. The products of these works are steam engines, ice machines, &c.

The Howell Wheel Company, of Covington, Ky., who for several years past have been producing metal wheels with facilities entirely inadequate, although increased from time to time, have been, by reason of the steady and rapid increase in the demand for their wheels, compelled to secure larger quarters, which has been accomplished in the purchase of one acre of ground bounded by Eighth, Ninth and Washington streets and the Chesapeake and Ohio Railroad, in their city, upon which they have erected a two story brick structure 184 x 47½ feet, in the first story of which is now being placed all the necessary machinery for the production of metal wheels. The second story will contain lighter machinery and tools, and a portion of it will also be used for storage. An admirable system of lighting and ventilation has been adopted. The new works will be ready for operation not later than August 15, and will have a capacity for turning out 1500 wheels of various sizes daily. The fuel used in the heating furnaces, of which a large number are used, will be crude oil.

Fred J. Meyers Mfg. Company, Covington, Ky., finding so much room taken up by their blacksmith department, have been compelled to erect another (the third within a few years) addition to their already extensive establishment for that branch of their work. The new building adjoins the old premises, having a frontage of 30 feet and a depth of 180 feet, two stories high, brick.

The Universal Radial Drill Company, Cincinnati, Ohio, advise us that the demand for their universal radial drills is constantly growing, especially so this year, not only in the United States, but in foreign countries. Last week they received a direct order from the Swedish Government for one of their largest machines and one for the next smaller size for Monterey, Mexico, while three more of the latter size are to be shipped to various parts of the United States.

The National Water Tube Boiler Company, of New Brunswick, N. J., have recently added an extension to their works, and are putting in additional machinery, which will greatly facilitate deliveries. The plant of about 600 horse power of these boilers lately erected for the Sawyer Man Electric Company, in Twenty-third street, New York, is a model one, combining in its construction the best results of advanced mechanical practice.

The Foster Engineering Company, of East Orange, N. J., have been incorporated with a capital stock of $40,000, for the purpose of buying and selling mechanical appliances.

OBITUARY.

ELISHA HARRIS.

Elisha Harris is deserving of more than a passing notice. He was born in Cranston, R. I., on June 19, 1807, being a lineal descendant in the seventh generation of the celebrated William Harris, one of the founders of the State. In his early manhood he removed to Slatersville, R. I., where he was in the employ of Almy, Brown & Slater, they having, about the year 1806, purchased a property and erected a cotton mill in that village. In 1833 the brothers Samuel and John Slater bought out the interests of Almy and Brown, and became equal owners of the mill and privileges under the firm name of S. & J. Slater. Of these mills, or of one of them, Mr. Harris was for a time superintendent. On October 2, 1831, he married Mary A. Winsor, daughter of Abraham and Ancey Winsor. Three sons were the fruits of this marriage, of whom William A. and Abraham W. are living. The former is the well-known manufacturer of the Harris-Corliss steam engine. From Slatersville Mr. Harris removed to South Woodstock, Conn., where he built a cotton mill, and here his two surviving sons were born. From 1840 to 1846 he was engaged in the calico printing business at North Adams, Mass., the firm being Brown, Harris & Co. In the year 1846 he removed with his family to Providence, and here the remainder of his life was spent. He invented and patented several improvements in cotton machinery, but failed to realize from them any permanent advantage. He was superintendent of the Providence Forge and Nut Company until their consolidation with the Providence Tool Company. He was also for a time connected with the Corliss Steam Engine Company, and he thus paved the way for his son's present position and success. The subject of this sketch died on July 29, 1890, in his 84th year.

NEW ENGLAND MISCELLANY.

There has recently been finished at South Framingham, Mass., a small steam yacht that bids fair to create a revolution in marine boilers and engines. The yacht was built by S. L. Johnson for T. L. Sturtevant, who is the inventor and patentee of the new boiler, which is fed by crude petroleum, and which in a boat 25 feet long has developed 30 horse-power and a speed of 15 miles an hour. Mr. Sturtevant is now building a 50-foot yacht at his place at South Framingham, and the triple expansion engine will have 100 horse-power, an uncommon thing in a boat of this size, promising great speed.

Since the recent accident to the large upright engine of Wamsutta Mills Nos. 4 and 5 the management see that it is not safe to trust to one engine to furnish power for both mills, and have decided to put in another engine. A building for the purpose will be erected on the south side of the old engine room. It will be of brick, 66 x 72 feet in size. The pump house is being demolished to make room for it. A Corliss compound tandem engine will be adopted, having four cylinders, two on each side. The low pressure cylinders will be in rear of the high pressure, and will probably be 34 inches in diameter, while the latter are expected to be 44 inches. The horse-power is to be 1500. Twenty-two Corliss upright tubular boilers, 72 inches in diameter, with 2½ inch tubes, will be required to make steam.

The Burns Oil Conduit and Burner Company have been organized at Bennington, Vt., with a capital stock of $500,000. The object of the company is to handle devices connected with the conducting and burning of oils and gases for heating and illumination.

All the property, real and personal, of the Boston Steam Heating Company will be sold at auction August 23, under the power of sale of the mortgage, for the benefit of the stockholders.

The Thomson Electric Welding Company are extending their plant by building large works at Newark, N. J., for the purpose of welding tubes to go into ice machines and similar machinery.

The Fitchburg Steam Engine Company, Fitchburg, Mass., are very busy now on contracts. They are fitting out the complete steam plant for the United States Government at Watervliet Arsenal, West Troy, N. Y.; building an engine for Farley Paper Company, Ewing, Mass.; shipping three large engines to Chicago; putting in an engine and boiler for the Charles Parker Company, Meriden, Conn., and also an engine for the Meriden Britannia Company; putting in two engines for the Falulah Paper Company, Fitchburg, Mass.; one engine for the Fitchburg Mfg. Company; fitting out complete plant, engine, boiler, &c., in Shirley, Mass.; building an engine for the Baldwinville Hospitals, Mass.; building a large compound engine for a cold storage company in Boston; an engine for the Boston Rubber Shoe Company; one for the Real Estate Trust Company, in Boston; a large engine, boiler, &c., for the Barney Marble Company, Swanton, Vt.; putting in complete plant for the Electric Light Company, at Princeton, N. J.; putting in a large plant, engines, boilers, &c., for the Clinton Electric Light Company, Clinton, Mass.; a complete plant at Kingston, Mass.; two engines, boilers, &c., for a large paper mill in Delaware, besides other work.

The Iron Works Corporation, of Fall River, held their annual meeting last week. M. C. D. Borden was elected president; E. L. Griffin, clerk and treasurer; M. C. D. Borden, C. N. Bliss, L. P. Marshall, of New York, A. S. Covel, of Lowell, directors.

The case of the Dickson Mfg. Company, of Scranton, against the Washington Mills, of Lawrence, Mass., which has been so long in court, has been settled by the referees, John Henthorn, the steam expert and mechanical engineer, of the firm of Remington & Henthorn, mechanical engineers, of Providence, R. I., and E. D. Leavitt, mechanical engineer, of Cambridge, Mass. After a seven days' test at the mills of the Washington Company of the engine and boilers, during which time new fires were built under the boilers each day, the referees filed their report with the clerk of the court of Essex County, at Salem, Mass., stating that the engine and boilers which were furnished by the Dickson Company were up to the guarantee made by that company of 2.7 pounds of coal per horse-power per hour. They find that the mills must pay the $25,000 yet due on the plant, and pay all expense of testing, &c. There is no appeal above this report.

Parties from Brazil were in Lowell last week placing orders for machinery to be run in a mill now being erected at Monte Carlo, Brazil, on the site of one burned a year ago. This machinery will be sent from New York to Rio Janerio by steamer, thence by rail 300 miles, and for a remaining 300 miles it will be carried by mules. About 400 mules will be required for the transportation of the Lowell order alone.

The West End Company, of Boston, have recently put into service on their electric line between Dorchester and the Tremont House half a dozen open cars of novel design, elegant finish and increased seating capacity. The cars are a little over 30 feet in length, have 10 seats, instead of eight, as in the ordinary open car, and will seat 50 people and give standing room for as many more. They are mounted on two four wheel trucks after the manner of a steam railroad car, and as a result are very easy riding. Each truck is equipped with a 15 horse-power motor, so that both speed and power are equal to that of the ordinary car. In these cars an important advantage is gained in the matter of fenders. The wheels of each truck are so close together that the truck itself has very little tilting motion, and fenders can therefore be projected further forward than from the ordinary four wheel truck, with a large wheel base. The trucks are also very near the ends of the car, so that a curved fender projecting nearly to the extreme end of the car can be carried. The effect of this fender, running close to the track, would seem to be to push anything on the track to one side rather than to drag it along. The trucks are the design, in their special adaptability to steel railway work, of Master Mechanic Lewis Pfingst, of the West End, and furnish just the support needed for the long car body.

The final arrangements have been made to remove the Fitchburg Steam Engine Company's works from their present location at Fitchburg to Gardner, Mass., and will be a serious loss to the former city. The company were unable to secure needed room for enlarging their business at their present location, and the generous terms proposed by business men of Gardner have been accepted. The company receive a large bonus in cash and a large stock subscription, materially increasing their capital. They receive also about 2 acres of land on the Worcester branch of the Fitchburg Railroad, in the center of the town. The company will begin building about September 1, and hope to get into the new building early in the spring. The building will have a capacity for 125 men, and a large increase will be made in machinery.

The Board of Trade Committee, to whom was referred the subject of locating at Bristol, Conn., the Turner Heater Company, of Meriden, are making favorable progress. The plan proposed was to organize a $50,000 company, half the stock of which should be issued to Mr. Turner and his associates for their patents and good will. Of the remainder $8000 is to be issued to E. Ingraham Company for the purchase of their case shop after a year's experimental work, during which they furnish it rent free, the remaining $17,000 to be offered for cash subscribers. The meeting approved of the plan, and instructed the committee to go ahead under it, as it is believed that a company can be formed at once on that basis.

The Iron Age

New York, Thursday, August 14, 1890.

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CHAS. KIRCHHOFF, JR. - EDITOR.
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RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Collapse of Speculation.

The insatiate rage for speculation that has swelled the volume of transactions on our mercantile exchanges to almost fabulous proportions during recent years seems to have well nigh run its course. The dullness is pronounced chronic, perhaps incurable, for instead of showing signs of alleviation it becomes intensified with each succeeding week. "Bucket shops" have been closed, the "gutter snipe" has vanished. Comparatively few crowd around the ticker to examine the winding tape. This is a marvelous change since the disastrous wheat corner in Chicago, of which conspicuous victims are still behind prison bars. It is generally conceded that the year thus far has been prosperous, and of money there has been no lack. Never before perhaps have opportunities for desirable investment been more greedily seized upon, as witnessed in the case of Claflin & Co.'s reorganization and similar schemes. Whence, then, this timorousness, indifference or whatever it may be, in regard to purely professional speculation? Some one tells us: "The truth is, the speculative public has become tired of playing with loaded dice, of being milked by professional cliques, who have taken possession of the exchanges and have periodically rigged the markets simply to entrap the wary." It is doubtless a fact that the so-called business on 'change has degenerated, to a very large degree, into gambling *per se*.

An examination of the statistics of the Produce Exchange shows that three years ago the recorded sales of wheat amounted to more than three times the entire product of the country, but last year the aggregate dropped to a little more than twice the entire crop. Sales of lard declined in amount something like two-thirds, compared with the former period, and the signs of decadance are no less observable in regard to other commodities. On the Stock Exchange it is complained, in like manner, that the bottom has utterly fallen out. Foremost in former dealings were railroad securities, and transactions in this class of securities were supposed to have a wide significance as indicating the general prosperity and tone of business. In other words, Stock Exchange quotations were commonly accepted as a sort of financial barometer. But this is no longer so. For some months past "trusts," often of no tangible value and liable to the widest fluctuations, according to the vigor with which the wires are worked, have usurped the place of solid properties. Even on this wretched basis the aggregate of daily transactions of late is not equal to the business formerly done in a single property, and the present low average of 100,000 shares a day is scarcely half the amount recorded for the corresponding week last year, or only about one-third when compared with the dealings of 1887. On the Petroleum Exchange listing "Lima oil" from the newly opened fields in Ohio, it is hoped may impart a little animation, and the listing of low grades on the Coffee Exchange, a radical measure agreed to last week, may serve a like purpose there. The Metal Exchange, it is needless to say, is a thing of the past.

Under the circumstances above described it would be difficult to judge of the sufferings of the professional speculator, who, in the absence of the general public, must resort to the methods of the cannibal. One good purpose at least will have been served, if passing experience carries with it an admonition to abstain from the follies which, following the season of harvest in former years, have hoarded the grain, deranged the channels of trade, laid up fleets of steamships for lack of cargo, thrown our foreign exchanges into confusion and upset the balance of trade.

The Brotherhood of Machinery Molders, at their convention in Indianapolis last week, adopted as the policy of the association a declaration that every possible means should be taken to prevent strikes in cases of disagreement between molders and their employers. Arbitration is recommended very strongly, but if employers should refuse to arbitrate the Executive Board is given power to determine upon the course to be pursued. This seems to be extremely reasonable and conservative. Arbitration, or at least a frank and friendly discussion of grievances by masters and men, would check almost all of the strikes which now interfere with important business interests or with the comfort and convenience of the public. There will never be a time when disagreements will not occur, but every disagreement could be speedily settled if reason and moderation marked the subsequent proceedings on both sides.

Prospective Mischief in Reorganization.

In view of the consequences to our business public and the widespread influence the matter is likely to exert, this week's reorganization of the J. & P. Coats thread works on a basis of $27,983,333.34 capital is calculated to excite considerable interest all over the country. It is significant because only two days were allowed for subscribing to two-thirds of the above sum, the other third remaining in the hands of the Messrs. Coats. The books were opened for the purpose simultaneously in England, Canada and New York last Tuesday morning, the 12th inst., and closed yesterday at or before 4 p.m., too late for us to announce the result. This is a British method of doing business, paying out from $20,000 to $25,000 in display advertisements for a few days only, then giving the public about as much time to subscribe as clerks may require to write up the applications. As said, in view of the influence this undertaking is likely to exert upon our industries in all departments of trade, inducing an excitement which is highly likely to bring about a change in existing methods, it may be well to draw attention to some of the weaknesses in the prospectus.

The first question a business man would naturally ask is, How much "water" is contained in the stock representing the new capitalization? This very question was asked of the Bank of the Manhattan Company, which is the authorized agent for the receipt of subscriptions, and their reply was: "We do not know; we have not had time to look the matter up." They referred to others in a distant part of the city, who had had previous dealings with the Messrs. Coats, for the desired information. The Coats are to receive $19,166,750 in cash—counting $5 to the pound—of the sum collected, as a part payment for their mills, stock in trade, rights and goodwill. No part of this sum is to be used in the enlargement of or for any other purpose connected with the betterment of the newly organized company. From this prospectus only one inference is to be drawn—that a large proportion of this vast sum of money is a bonus paid to the Coats for their business, which the new stockholders may pay interest upon out of the future profits of the business of thread making.

Singular to relate, the prospectus does not state, nor did the officials of the Bank of the Manhattan Company know, what was approximately the cash value of the plant as it stands. This is a striking feature in itself, for it deeply concerns capitalists to know what amount of property the $28,000,000 asked for represents. Six million eight hundred thousand dollars are accounted for in certified statements covering cash to be furnished to conduct the business and the value of the stock in trade now contained in warehouses and the mills. But that is all. The investor is left to infer that the mills, real estate and machinery represent $22,000,000, or thereabouts.

The prospectus shows that the past profits of the business were sufficient to pay a fair interest upon the new capitalization. Whether these profits will continue or not at the same ratio is, of course, speculative; but, admitting it for the argument's sake, the new capitalization is based strictly upon these past profits, and so far as the Bank of the Manhattan Company knew, and the prospectus states, that capitalization, with the exception of the $6,800,000 named, leaves all else to inference. No information is given concerning the real cash value of its assets. Admitting the high credit and high standing of the Messrs. Coats, and the good character of the work they have done, is this sufficient in itself for them to ask buyers of their stock to put nineteen millions of dollars

in cash into their pockets for which no stated value is returned?

Stock watering, when plainly made known to the stockholders, is one thing, and stock watering, totally unknown as to quantity or amount, is another. A course taken that yields no information, or only a fractional part thereof, cannot be commendable from a strictly legitimate standpoint. Appearances point out, as we have repeatedly alluded to in our columns, that we are on the eve of a new departure in business methods. The prevailing low rates of interest for first-class securities and the steady withdrawal of Government bonds release a large amount of capital that seeks some form of investment likely to give good returns. To no channel is the average investor's attention turned more than toward the corporate reorganization of existing industries. Because of this fact the temptation of reorganizers to overcapitalize may become a serious mischief that it may be well for all business people to observe. Mr. Claflin, of the H. B. Claflin Company, which recently reorganized its business, receiving $22,000,000 subscriptions for the $6,000,000 in stock offered to the public, recently said to a reporter that he had received letters from 50 firms asking explanations of the procedure necessary to reorganize the business of the writers in a similar manner. Honestly conducted corporate methods possess unquestionable advantages for mercantile consideration; but unhealthy inflation will be a source of great danger to the industries afflicted.

Inventive Activity.

It is a striking feature of these days of rapid mechanical progress that no man is secure in the possession of any part of the mechanical field. He may hedge about a new invention with innumerable patents and esteem himself so well protected that he can snap his fingers at competitors. But ere long another genius comes upon the field with an article adapted to the same purposes, but probably made in a wholly different way, so that his operations cannot be checked by suit or injunction. Indeed, the former will be most fortunate if the newer production does not supersede his own. There are certain lines of manufacture in which the principles followed have not been changed for so many years that they are regarded as standard, and new works are laid down on the old lines with variations only in details. But these time-honored preserves are now being invaded by daring innovators, and one after another branch of manufacture succumbs to the march of mechanical progress. Our pages have never been so rich in the illustration of new designs of machinery, tools and mechanical apparatus of all kinds as in these latter days. There may indeed be "nothing new under the sun," but new ways of doing old things are certainly coming forward with startling rapidity.

In the line of heavy machinery the new processes now developing are in the direction of improving the functions of the hammer and rolls. It is a curious fact that rolls are now being made to do much better and more rapidly a great deal of work once handled exclusively by forgemen, while, on the other hand, improvements in hammers and dies have enabled another class of work to be taken from rolling mills or from foundries, because it can be turned out better, truer or stronger by a properly equipped forgeman. Less of this is occurring, however, than in the adaptation of rolls. In the hands of the skillful modern manipulator of rolls results are being accomplished which seem incredible to the uninitiated. Rolls are no longer deemed capable of but one movement, and that in the direction of breaking down or reducing. The universal mill introduced side rolling or lateral compression, which was a marked improvement, but there are now in use many variations of side rolls, conical rolls, rolls with automatic expansible openings, oscillating rolls and even ingot cutting rolls. The field for the development of the rolling mill has been a most fruitful one, and its possibilities have by no means been exhausted. A rich harvest is yet in store for inventors who will revolutionize sheet rolling, while beams should certainly be produced much cheaper than they now are by the old methods. The York beam mill promises well in this direction. A small model of that mill, with rolls but 2 inches in diameter, has produced perfect miniature steel beams of 1 inch in hight from a hard steel bar, 2 inches wide by ¼ inch thick. It was an extraordinary performance for a mere model, and shows what can be done with rolls. The new tire mill of the Chicago Tire and Spring Company is now doing work which has never before been accomplished by any rolling mill, and is demonstrating daily the superiority of rolls over hammers for that character of product. These are but a few of the examples which might be cited to demonstrate the progress being made in the direction which we have indicated.

The Concord.—The new steel gunboat Concord, which was launched from Roach's yard last spring with all her machinery on board, is nearly ready for active service. Like the Yorktown, she is of 1700 tons displacement and is required to develop 3400 horse power. For each unit of horse power above the guarantee the builders will be allowed a premium of $100 over the contract price of $490,000. The work of the construction of the Concord was divided and sublet. The Delaware River Shipbuilding Works constructed the hull; the Quintard Iron Works built the engines; the propellers were cast by a firm in Philadelphia; the iron castings were made at the Delamater Iron Works, in New York; the steel plates were made by Carnegie's Works, at Pittsburgh, and the Midvall Steel Works made the shafts. The Concord's engines are of the twin screw triple expansion type and are placed in a separate inner compartment; the bunkers are so arranged that the coal will afford protection to the boilers from the shots of the enemy, and the machinery and steering gear are covered at the water line with a curved water tight steel deck.

The Proposed English Warrant Law.

The following is the full text of the bill to regulate dealings in pig iron warrants, which is backed by Mr. Hingley, Mr. Ainslie and Mr. Isaac Wilson:

Whereas, it is expedient to make provision for the restraining of the making of contracts for the sale and purchase by means of warrants of pig iron which is not at the time of the making of such contracts in existence:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. For the purposes of this act the expression "document of title" shall mean any dock warrant, storekeeper's warrant, maker's scrip, and any warrant or order for the immediate delivery of pig iron, and any other document used in the ordinary course of business as proof of the possession of pig iron, or authorizing, or purporting to authorize, either by indorsement or by delivery, the possessor of the document to transfer or receive delivery of the pig iron thereby represented.

2. From and after the passing of this act all contracts, agreements and tokens of sale and purchase, made or entered into for the sale or transfer of any pig iron to which any document of title shall be applicable, shall be null and void to all intents and purposes whatsoever, unless such contract, agreement or token shall specify or incorporate a document of title specifying the name and address of the storekeeper or other person or persons by whom such document was created, the number by which the said document of title is distinguished at the time of the making of such contract, agreement or token, the date on which such document of title was made, and the brand or quality of the pig iron to which such document of title is applicable; and every person, whether broker, principal or agent, who shall wilfully insert in such contract, agreement or other token, or in such document of title, any untrue statement in respect of any of the particulars required by this act to be specified, shall be guilty of a misdemeanor, and punished accordingly, and, if in Scotland, shall be guilty of an offence punishable by fine or imprisonment.

3. Any person who shall create or issue, or cause to be created or issued, any instrument purporting to be a document of title to pig iron, and shall not have at the time of such creation in his possession, or in the possession of some person on his behalf, the pig iron to which the said instrument purports to relate, shall be guilty of a misdemeanor and punished accordingly, and, if in Scotland, shall be guilty of an offence punishable by fine or imprisonment.

4. This act may be cited as the Pig Iron Warrants act, 1890.

Mr. Benjamin Hingley, M.P., president of the British Iron Trades Association, and a sponsor of the bill for prohibiting gambling in pig iron warrants, has, in the course of an interview, stated that there had long been a feeling of irritation among ironmasters at the way in which the markets were manipulated by speculators; but the association had been spurred into action by the disastrous result of the speculative fever which created the "boom" of six months ago, and the subsequent reaction and depression in prices and demand. The bill, he said, does not propose to interfere with genuine dealings in warrants, but to make it compulsory that a seller of a warrant shall have the iron in store, and warrants shall only represent iron actually in store. Under the present unlimited system of gambling the natural operations of supply and demand are superseded, and trade is at the mercy of gamblers, the effect being often most disastrous. But for the speculative "boom" the English iron trade might have gone on steadily prospering. The bill had been approved by the Attorney-General and Mr. Hingley hopes it will be passed next session.

The H. C. Frick Coke Company, of Pittsburgh, deny the accuracy of the statement published in the Chicago market report of *The Iron Age* of July 31, to the effect that the price of Connellsville Coke had gone off 40¢ ℔ ton.

OUR BLAST FURNACES.

Production Sharply Reduced.

During July there has been quite a sharp reduction in the output of pig iron throughout the country, due principally to the blowing out of an unusually large number of furnaces for repairs. In no instance which has come under our notice does this mean that the plants in question are going to be idle for any very long period. It is a fact worthy of being recorded, too, that quite a considerable number of the plants report July product as having been considerably below the usual tonnage.

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week. Gross tons.
August 1	324	164,798
July 1	336	175,727
June 1	345	180,791
May 1	344	180,099
April 1	344	178,474
March 1	343	180,991
February 1	334	173,651
January 1	333	174,038
December 1	328	169,151
November 1	323	165,225
October 1	311	151,057
September 1	294	134,068
August 1	286	145,899
July 1	285	141,419
June 1	286	137,119

A close study of the details, so far as they concern the different districts throughout the country, warrants the statement that the heavy decline which these figures show is not likely to be permanent. In other words, the conditions affecting the industry have not been such as to lead to a general discouragement which finds its expression in a temporary retirement from it. The decline in the output has been due solely to the fact that a large number of plants happened to need repairs, for the work on which the season is favorable. We may observe that in an exceptional number of cases during the current year these periods of repairs have been seized to make very substantial improvements. Hardly a week passes but what the announcement is made that at some plant new stoves, blowing engines or other additional machinery is to be put in, that furnaces are raised in hight, &c. These are reflected in growing capacity of old plants, which calls for constant vigilance in revising former figures, and tends to make product heavier.

The new furnaces, notably in the South, are coming in very slowly. The date of blowing in is delayed from month to month. Still, a number of them will come into play next month, although announced months ago.

In detail the status of the anthracite furnaces was as follows:

Anthracite Furnaces, August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	23	9	2,926	14	3,625
New Jersey	14	6	2,847	8	2,855
Spiegel	3	3	218	0	0
Pennsylvania:					
Lehigh Valley	45	34	12,842	11	3,870
Spiegel	1	1	68	0	0
Schuylkill Valley	37	21	8,054	16	4,845
U. Susquehanna Valley	18	10	3,205	8	2,731
Lebanon Valley	16	12	5,713	4	2,140
L. Susquehanna Valley	16	8	4,490	8	1,835
Spiegel	2	2	650	0	0
Totals	175	106	41,013	69	21,901

For the past 15 months our records show the following:

	Furnaces in blast.	Capacity per week.
August 1	106	41,013
July 1	112	42,543
June 1	117	45,142
May 1	123	46,912
April 1	119	46,110
March 1	115	45,790
February 1, 1890	107	43,905
January 1, 1890	105	42,857
December 1	100	40,053
November 1	96	40,603
October 1	94	36,558
September 1	93	35,997
August 1	88	34,277
July 1	89	34,142
June 1	91	34,386

The status of the coke furnaces was as follows:

Coke Furnaces, August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	4	3	3,384	1	559
Pennsylvania:					
Pittsburgh district	21	18	23,787	3	2,026
Spiegel	1	0	0	1	883
Shenango Valley	19	15	10,746	4	2,906
Juniata and Conemaugh Valley	17	10	5,818	7	3,825
Spiegel	1	0	0	1	500
Youghiogheny Val	5	2	865	3	1,454
Miscellaneous	4	2	1,206	2	1,180
Maryland	5	2	3640	3	3,830
West Virginia	6	3	2,648	3	770
Ohio:					
Mahoning Valley	14	12	9,535	2	1,410
Central and Northern	18	11	8,657	7	5,430
Hocking Valley	14	4	1,410	10	2,500
Hanging Rock	14	7	1,480	7	1,242
Indiana	2	0	0	2	380
Illinois	14	12	12,360	2	2,130
Wisconsin	4	3	2,334	1	370
Missouri	6	2	1,550	4	2,150
Colorado	2	1	450	1	430
The South:					
Virginia	13	9	4,546	4	2,177
Kentucky	4	3	854	1	310
Alabama	36	23	14,433	13	7,820
Tennessee	11	5	2,222	6	2,760
Georgia	2	2	790	0	0
North Carolina	1	1	125	0	0
Totals	238	159	113,040	89	47,112

As compared with the 15 previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
August 1	150	113,040
July 1	163	120,673
June 1	167	123,340
May 1	169	122,489
April 1	173	121,560
March 1	169	122,595
February 1	169	118,568
January 1, 1890	169	119,396
December 1	162	116,319
November 1	160	112,269
October 1	154	102,454
September 1	141	96,744
August 1	137	96,720
July 1	136	96,584
June 1	135	91,771

In the Pittsburgh district Carrie No. 1, Edgar Thomson A, the spiegel furnace and B on Bessemer went out in July, while Eliza resumed. Shoenberger No. 1 is still undergoing repairs, but will blow in toward the latter part of the month. In the Shenango Valley Ella and Spearman were idle on the 1st inst., while in the Juniata and Conemaugh district one of the Blair furnaces of the Cambria Iron Company is out. In the Youghiogheny Valley Charlotte has temporarily suspended operations. In the Mahoning Valley Anna blew in on the 30th ult. after complete repairs. It will be operated by the present lessees—the Struthers Furnace Company. A notable temporary reduction of output has taken place among the furnaces grouped as Central and Northern Ohio, Cherry Valley, which has since resumed. Dover and Emma having stopped in July. In the South Virginia is producing less, with Princess and Pulaski out for repairs. In Alabama one of the Sheffield furnaces is out, but one of the Ensley stacks has started, after remodeling, under the most auspicious circumstances.

The condition of the charcoal plants was as follows:

Charcoal Furnaces, August 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	6	520	8	570
New York	8	2	284	6	633
Pennsylvania	16	4	380	12	690
Maryland	6	2	204	4	410
Virginia	18	3	134	15	740
Ohio	11	7	501	4	170
Kentucky	2	1	112	1	100
Tennessee	6	4	930	2	130
Georgia	3	2	205	1	80
Alabama	14	8	1,477	6	1,628
Michigan	24	14	3,798	10	2,740
Missouri	2	2	630	0	0
Wisconsin	6	3	1,310	3	710
Texas	1	0	0	1	170
California	1	0	0	1	120
Washington	1	0	0	1	170
Oregon	1	1	260	0	0
Total	134	59	10,745	75	9,061

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week.
August 1	59	10,745
July 1	61	12,511
June 1	61	12,312
May 1	52	10,698
April 1	52	10,804
March 1	59	12,606
February 1	58	11,378
January 1, 1890	59	11,485
December 1	66	12,779
November 1	67	12,893
October 1	63	12,047
September 1	60	11,327
August 1	61	11,902
July 1	60	10,727
June 1	60	10,962

July production has been quite light at a number of plants in different parts of the country. In Pennsylvania Pine Grove was out during a part of July. Hecla and Boiling Springs expect to blow in this month. In Maryland Isabella is probably now running. In Virginia White Rock is expected to begin a blast this month. In Alabama Ironaton is idle for repairs. Gadsden resumed on the 5th inst. Alcalde, in Texas, was to begin working again on the 4th inst., having been banked since the 2d of July.

CORRESPONDENCE.

Steel for Rivets.

To the Editor: In a paper read before the A. B. M. A. by M. C. Torrance, and which was published in *The Iron Age* of July 31, steel for rivets is spoken of with great confidence. If the undersigned takes the liberty to point to the reverse side of the picture drawn by the author of the paper with so much ability, it is not because he finds any fault with the idea of steel for rivets nor with the material itself, if it is uniform in structure, of the proper grade and is carefully handled, but because it is in the interest of the boilermakers as well as the steelmakers to make haste slowly in this matter. That this ought to be done in regard to questions of the qualities and properties of iron and steel the writer has learned from the testing and examining of 1000 tons annually of various classes of these metals made by various processes, besides following up the "life" of these metals in the most severe railroad service they can be put to, except it be the armor of a warship to be bombarded or the shell bombarding the same.

There are two sides to every story; but the story of the properties of metals has not only two, but many sides, and in presenting a fine array of figures as the results of tests of a metal as to its strength, elongation or contraction, only one side is told. This is the reason why the writer has laid so much stress, in his letter to the A. B. M. A., in their convention at Pittsburgh, in his contributions to

this journal and in everyday conversation, to the fact that careful and untiring study of the properties of metals is necessary in order to use them successfully and with economy. That this same principle applies also to steel for rivets has been pointed out by the writer in a former article (*The Iron Age*, June 5, 1890), when the property of flow of rivet material was mentioned as the principal property qualifying it to make "a good job."

However, the members of the A. B. M. A. strive to produce "first class jobs," and in this they will not succeed with steel for rivets which is from 5000 to 20,000 pounds per square inch higher in strength than iron for rivets, and in fact is as strong as the steel plate itself, according to the figures presented, unless conditions are favorable. To successfully rivet steel which is so much higher in strength requires powerful machinery and practice. The first requires money to procure, the second time and experience. The Navy Department, under the conditions peculiar to it, can do many things which are out of reach of a private concern. To avoid burning steel rivets—by the way, a very valid objection when boys heat them—cold riveting has been suggested. This would be like jumping out of the frying-pan into the fire. In cold riveting the rivet acts like a drift, upsetting and hardening the edges of the sheets in the rivet hole, causing undue strains on the riveted joints, and tending to weaken through want of uniformity along the seam. This objection to cold riveting applies more strongly to steel than iron. Besides, as the molecules of steel, even when heated, flow more sluggishly than those of iron, cold riveting of steel requires still more powerful machinery, at increased cost, and more skill than hand riveting, as well as a better understanding of the qualities of the metal, which, unfortunately, is very often an unknown quantity with the journeyman boilermaker.

Considering all points of the question, it would seem as if the conditions for a change, all along the line, from iron to steel were not quite ripe yet. How well the points enumerated are recognized by experienced engineers is shown by an extract from the specifications for building a steel bridge over the Danube at Cernavoder, in Roumania.*

In specifying rivet material it says: "All rivets which can be riveted with hydraulic machinery shall be of open-hearth steel, 52,000 to 62,000 pounds per square inch. All those rivets which must be riveted by hand must be of wrought iron." C. Stöchl, the engineer of the Austrian State railways, in his report on steel for bridges,† dwells on the material for rivets at length. He says: "Regarding the rivet material, it must be said that the physical tests gave excellent results (57,000 pounds per square inch, 25 per cent. elongation, 63 per cent. contraction). Yet when using the rivets they became easily overheated, even at a heat iron rivets would be heated to, and became decidedly red short. The order was issued, therefore, that all rivets which were to be used outside of the shops, at the place where the bridges were built, and were intended for the most important purpose, must be of wrought iron." From these extracts and from what has been said before it will be seen that, while steel rivets are freely and largely used for construction, they are used with care and caution, with a full knowledge of the properties of the metal.

This is also the stand taken by the writer. While not wishing to deter any one from using this metal for the purpose, he desires to call attention to the various sides which this question presents, to prevent disappointment and pecuniary losses, and the creation of prejudices which, as time goes on, may be out of place, just as the prejudice of the boilermaker against steel for boilers is out of place to-day, now that we know how to make and work steel for boilers. Possibly the time will come when the best raw material to make the best rivet iron out of cannot be had in sufficient quantity to cover the demand. Then steel must be used, just as in the case of boiler iron. P. KREUZPOINTNER.

Altoona, August 9, 1890.

* Published in *Stahl und Eisen*, July, 1890, p. 588.

† *Stahl und Eisen*, January, 1890, p. 23.

Freights in Eastern Pennsylvania.

To the Editor: Your editorial of July 17 was prophetic. The advance in freights on the Pennsylvania Railroad and the Philadelphia and Reading Railroad on Southern pigs (from their junction points to Northern mills) was promptly met by the Southern lines absorbing the advance (60 cents advance per gross ton), so that the Southern furnaces ship to all Pennsylvania points at the same through rates as before. The writer knows of large contracts since concluded at old prices.

The Eastern Pennsylvania rolling mills must have mill pig metal of quality equal to, or better than, the Southern irons at Southern prices (delivered), working without profit, or they will stop losing money in Pennsylvania and go to Virginia and further South, where manufactured irons can be made at a round profit. The same is true of the heavy iron founders, such as cast iron pipe works and the stove founders, who, together, consume the great bulk of the non-Bessemer furnaces' make of Nos. 1, 2 and 3 iron. We must soon expect to lose the greater part of Southern orders for bars, plates and sheets. We are already beaten in nails. Some of the Albany and Troy stove founders are now building Southern plants, claiming they can no longer take Lehigh foundry pigs to tide, thence up the Hudson, to put into stoves for the general trade. The Hudson River blast furnaces, except those on Bessemer pig, are mostly cold, notwithstanding cheap and good Champlain and Dutchess County ores, and the few stacks still blowing can hardly live at existing prices.

The only hope of relief for Eastern blast furnaces is a reduction of "the local rates on Pennsylvania iron to a parity of the figures until now granted as a pro rata on Southern irons," and what is more important still, even charges (with Southern railroads) on fuels, ores and fluxes on the short hauls. For the Hudson Valley a further essential—viz., heavy reduction in the price of Anthracite, which is there held away above that paid by both Schuylkill and Lehigh furnaces.

I write to second your editorial of 17th ult., hoping your influential journal may convince the Eastern Pennsylvania Railroads and the coal companies that prompt relief is needed to avoid the bankruptcy or closing up of many of the furnaces and mills located on their lines. Very truly, yours, J. WESLEY PULLMAN.

A Triple Screw Steamer.

A cruiser having a displacement of 6296 tons and to be driven by three screws is now being built for the French navy. This is probably the outcome of the success attained with two screws and of the advantage shown by a limited number of tests of three screws. It is argued that where two screws and two sets of machinery are better than one, three will be better than two, and the French alone are enterprising enough to make the experiment on an extended scale, although the Italians have had for some time three torpedo cruisers—the Tripoli, the Montebello and the Mozambano—fitted with three screws. These torpedo cruisers were built, however, after the French Government had made a series of experiments with a steam launch called the Carpe. The experiments with the Carpe did not show any advantage in the way of speed, but this, it is said, was due to the fact that the propulsive area of the blades of the three screws only equalled the area of the blades of the twin screws, and to the further fact that the three screws were placed so near the hull that they did not have a fair chance, because the shape of the hull was such that it prevented a free flow of the water along the run to the screws; they were in a position somewhat like that of the screw in the stern of a steam canal boat. A number of experiments were tried with the Italian torpedo cruiser Tripoli, in which she was propelled, first with one screw, then with two and last with three. With one screw she made 14.55 knots an hour; with two, 18.33 knots, and with three 19.8 knots. The horse-power exerted was, in the three trials, 1030, 2076 and 3016, respectively. Another important feature of the trials was that, while the slip when two screws were used was 18.6 per cent., it was only 5.25 per cent. with three. The screws used in the trials were not the same, however, and it is possible that the triple screw would have made a still better showing had the screws been alike in all trials. Among the things to be determined in the use of three screws is the location of each. In the new ship of the French navy one screw is to be located where a single screw is located in an ordinary ship, and the other two above and forward of the first.

The foundry business formerly operated under the title Eagle Foundry, John B. Morris, proprietor, Cincinnati, Ohio, was, under date of August 5, reorganized as an incorporated company, paid up capital $100,000, with the following officers: J. B. Morris, president; S. L. Miner, treasurer; Henry J. Grossius, secretary, and George Brockhofer, superintendent. The new company, by reason of the entirely inadequate facilities heretofore enjoyed for production, have purchased ground corner of Harriet and Court streets, measuring 125 x 275 feet, upon the Harriet street side of which will be erected at once, the main building, a four-story brick structure, having a frontage of 125 feet and depth of 62 feet, back of which and connected thereto will be the foundry proper, a brick building 90 x 200 feet; $50,000 will be expended upon improvements and the new plant will be a model one. The specialties of the company are stove repairs, the Morris Telephone Tablet and a line of heavy hardware. Special attention is given to fine core work, for which they have built up an extensive trade; their capacity will be far in excess of that at present, and from 250 to 300 hands will be employed. The new plant will be ready for occupancy, it is expected, by July 1, 1891, at which time the present works will be removed.

Non-Bessemer lake ores have receded 50 cents a ton, the mining companies having abandoned the advance for which they held out earlier in the season. It remains to be seen whether Bessemers will follow. It is stated that the mining companies propose to keep the shipments down, so as to avoid the decline.

A strike on the New York Central Railroad occurred on Friday that threatened to become of formidable proportions, but it lacked the approval of the chiefs of the locomotive engineers and locomotive firemen respectively, and has apparently failed. After two days' interruption of traffic trains are now being dispatched with regularity. At St. John's Park freight depot affairs are resuming their normal condition.

TRADE REPORT.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, August 13, 1890.

The local Iron market presents no marked changes either in demand or price. Finished products are still very active, with an upward tendency. Scrap Iron is becoming scarce and dearer.

Pig Iron.—Dealers, without exception, report a quiet week, with some inquiry, but light sales. They are very busy, however, making deliveries on old contracts, and the consumption appears to be increasing. This is shown by the urgent demand from foundrymen for more rapid deliveries of Iron ordered. In numerous instances they are asking for shipments in advance of the time stated in contracts. Another important indication is the receipt of inquiries from consumers who were supposed to be well supplied with Iron for some months ahead. Prices are well maintained all round. The concessions noted last week in Southern Coke Iron have not been followed up; but, on the contrary, leading Southern makers have refused considerable tonnage which might have been had at a cut of 25¢. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$20.00 @ $20.50
Local Coke Foundry, No. 1	16.50 @ 17.50
Local Coke Foundry, No. 2	16.00 @ 17.00
Local Coke Foundry, No. 3	15.50 @ 16.00
Bay View Scotch	18.00 @ ...
Am. Scotch (Strong Soft), No. 1	19.25 @ 20.25
Jackson County, Soft and Silvery, No. 1	18.25 @ 18.50
Southern Coke, No. 1	16.50 @ .....
Southern Coke, No. 2	16.00 @ .....
Southern Coke, No. 3	15.50 @ ....
Southern, No. 1, Soft	16.00 @ .....
Southern, No. 2, Soft	15.00 @ ....
Southern Gray Forge	15.00 @ .....
Southern Mottled	14.00 @ .....
Tennessee Charcoal, No. 1	19.00 @ .....
Missouri Charcoal, No. 1	18.50 @ .....
Alabama Car Wheel	22.50 @ 24.00

Bar Iron.—The demand is very good, but buyers are resisting the advanced prices asked by makers and are only covering their immediate wants. Sales have been made at 1.85¢, half extra, for Common Iron, and this now seems to be the bottom rate, especially as Old Material is moving upward and thus causes increasing cost of production. The disposition of consumers to make distinctions on account of quality is steadily growing, and manufacturers of high grade bars are receiving more business. Sales of specifications Iron have been made at 1.95¢, Chicago. Jobbers quote 2.10¢ @ 2.20¢, with 2¢ bottom for largest lots.

Structural Iron.—Several very large buildings will soon be ready for bids on their steel frame work and the consumption of beams promises to expand hugely. The demand is now in excess of the supply. The following quotations prevail on carload lots, f.o.b.: Angles, 2.30¢; Tees, 2.80¢ @ 2.90¢; Beams, 3.20¢; Universal Plates, 2.45¢ @ 2.55¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2 60¢ @ 2.70¢; Car Truck Channels, 2.60¢. Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ℔ 100 above carload prices.

Plates.—Dealers report another very active week, but with business mainly out of store. Mill prices are higher. Store prices are very firm, but unchanged: Nos. 10 to 14 Iron Sheets, 2.80¢ @ 2.90¢; do., Steel, 3¢ @ 3.10¢; Tank Iron, 2.65¢ @ 2.75¢; Steel, 2.85¢ @ 2.95¢; Shell Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.50¢; Rivets, 4¢ @ 4.25¢; Norway Rivets, 40 %, off; Tubes, one three-quarter and less, 40 % off; two to four and a half, 50 % off; larger, 52½ % off.

Sheet Iron.—Jobbers are now enjoying a good trade from consumers who are making up seasonable goods. They quote 27 Common Black at 3.40¢, but make slight concessions according to circumstances. Galvanized Iron is hard to get from the mills, shipments being greatly delayed on account of the volume of business pressing. Jobbers quote Juniata Galvanized at 60 and 10 % off.

Merchant Steel.—Soft Steels are quite active and advanced prices are being obtained by some makers. A good demand is also noted for Tool Steel. Prices are as follows: Tire Steel, 2.40¢ @ 2.50¢ rates; Open Hearth Spring and Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Crucible Spring, 3.50¢; Tool Steel, 7¢ and upward; Crucible Sheets, 7¢, 8¢ and 10¢.

Steel Rails and Supplies.—Numerous inquiries are being received for light sections which promise to form a desirable element in the trade this fall. A great deal of business is also coming up in standard sections, and it now looks as though there would be only a temporary lull in the demand. An Eastern mill was successful in securing some 3000 to 4000 tons at St. Paul last week on which the mills here were unable to make delivery desired.

The price asked here is still $33.50. Splice Bars are quoted at 2.05¢ @ 2.10¢ for Iron and 2.25¢ Steel; Spikes, $2.15 @ $2.20; Track Bolts with Hexagon Nuts are hard to get for early delivery, but can now be had at 3¢ @ 3.15¢ for delivery in October and November.

Old Iron Rails—Are quoted at $26.50 @ $27. Buyers are willing to pay the former, while holders ask the latter. A small sale is reported to have been made at $27. In Old Steel Rails not much is doing, but they are steady at $19 half short and $22 long lengths. Old Car Wheels are quiet at $19.50 @ $19.75.

Scrap.—The improvement noted last week continues. Prices are stiff and stocks are light. Dealers are paying $17 for Mixed Country Scrap; No. 1 Railroad, $21.50 @ $22; No. 1 Forge, $21; Axles, $26.50; Half Mill, $16.50; Stove Plate, $10.25; Wrought Turnings, $13; Axle Turnings, $13.50; Horse Shoes, $19.50; Car Axles, $25.50; Mixed Steel, $14.25; Coil Steel, $18; Leaf Steel, $19; Tire Steel, $20.

Pig Lead.—Prices have gradually hardened, although sales have been light. The demand has been for spot Lead, however, and this has caused the improvement to 4.35¢ @ 4.40¢.

Louisville.

LOUISVILLE, KY., August 11, 1890.

Pig Iron.—There is a fair amount of business, the fall buying noted in last week's report continuing. Prices are firm, but there has been no advance, and it is thought that business will continue during the balance of the year with but little fluctuations in prices. Those basing their hopes of an advance largely on the passage of the Silver bill now feel that the heavy shipments of gold offset its effect to an extent that no special strength can be expected from this source, at least during the present year. The unsatisfactory condition of crops is affecting the agricultural companies, and in some instances they are compelled to carry over their finished product, so that their trade can be of no assistance to the market. Consumption continues very heavy, and outside of the agricultural companies no slacking of orders is perceptible, and mills report that they are crowded with work. There are several new furnaces going in blast during the coming month. These have expected to be making Iron for some time, and are now probably ready to run. We quote as follows:

Southern Coke, No. 1 Foundry	$14.75 @ $15.25
Southern Coke, No. 2 Foundry	14.25 @ 14.75
Southern Coke, No. 3 Foundry	13.75 @ 14.25
Southern Coke, Gray Forge	13.25 @ 13.75
Southern Coke, Silver Gray	14.00 @ 15.00
Southern Charcoal, No. 1 Foundry	17.50 @ 18.50
Southern Car Wheel, Standard Brands	22.50 @ 23.50

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., August 12, 1890.

Pig Iron.—The market shows so little change as regards Pig Iron that last week's report would correctly define the position to-day. There are absolutely no new features, and nothing to indicate any material change in the near future. The demand is fairly well in line with supply, so that neither buyer nor seller sees any good reason for deviating from his recent course of procedure, which is to deal from day to day on business that can be had at current rates. Buyers are trying for a lower range of quotations, failing which, they take only such small lots as are indispensable for their current requirements. Sellers are in an almost equally independent condition. The demand for small lots in connection with deliveries on old contracts enables them to keep down accumulations, and while this continues there is not much chance for lower prices. Once in a while transactions are reported at figures something less than those usually current, but on investigation they are found to be due to special circumstances, such as new brands, or brands of doubtful quality, a spot cash sale, or something that pretty nearly accounts for the difference in price. Hence we continue quotations at $15.25 @ $15.50, delivered, for Gray Forge, $16.50 @ $17 for No. 2 Foundry and $18 @ $18.50 for No. 1 Foundry. It is noticeable that there is a much heavier run on No. 2 Foundry than was formerly the case, hence No. 1 is relatively harder to move, unless at some concession in prices, although for really desirable brands there is not much good Iron to be had at less than $18. Southern No. 2 has been sold in this vicinity at $16 @ $16.25, delivered, but apart from that there is not much doing, and no great pressure to sell at anything below these figures. Several large lots of Cinder Irons have been placed recently at from $14 to $14.50, delivered, sellers now asking the outside figure.

Bessemer Pig.—The market is still very dull, although a few small lots have been taken at about $19 at furnace. There is a little more inquiry, however, and some prospects of business, but large buyers are not bidding within 50¢ @ $1 ℔ ton of the asking price, which is $19 at furnace.

Spiegeleisen.—A few small lots of 20 % have been taken at $31.50, duty paid, but buyers of large lots talk $30.50 @ $31, while some sellers quote $32.

Steel Rails.—The position is very much the same as noted for several weeks past. The demand for small lots is fairly active, and mills are kept full of work without having to make concessions in prices. There is some inquiry for larger lots, but there is nothing to indicate any material change from present conditions. Sales during the week at prices varying from $31.50 to $32, at mills, according to quantity, delivery, &c.

Steel Billets.—The market is hardly as firm as it was a week ago, and it is not unlikely that orders could be placed at $33, delivered, or possibly a fraction less for something very desirable. There is no urgency to sell, but, to keep the books well supplied with orders, those who are running a little close are willing to made the concessions above mentioned. A sale of German Billets was closed here yester-

day at $32.75, duty paid, but the order is said to have included some sizes which were very much in buyer's favor.

Muck Bars.—There seems to be a stand off on both sides, as neither buyers nor sellers are willing to make concessions. sellers quote $30 @ $30.50, at mills, but $30, delivered, is the best bid that buyers are willing to make for the present, and appearances indicate that sellers will have to give way before any business can be done.

Bar Iron.—The demand is fully equal to the output, and with prospects of a still heavier business in the near future prices have a very strong undertone. There is no quotable advance, however, and desirable orders can still be placed at 1.75¢, f.o.b. at country mills, or at 1.82½¢ @ 1.85¢ in the city. In case of a continued heavy demand, which seems pretty well assured, it is likely that an advance of ¹/₁₀¢ or so will soon be secured, but in the meantime sales are mostly at terms above named.

Skelp Iron.—There is a very heavy demand, more so, in fact, than mills are in a condition to meet. Prices are strong, and although 1.85¢, delivered, is all that buyers have paid so far for Grooved Skelp, it would be difficult to place orders to-day without conceding something additional in seller's favor. Sheared Skelp is also firm and active, 2.15¢ @ 2.25¢, delivered, with one lot sold for immediate shipment at the outside figure.

Plates.—The strong tone noted for some weeks past is fully maintained, and in some cases a slight advance is demanded on last week's prices. As yet, however, desirable orders are taken at quoted rates, although any further increase in the demand would be sure to lead to a higher range of prices. The demand is not confined to any particular department, but appears to be of a general and well distributed character, so that mills are nearly all full, with unusually good prospects for the balance of the year. For lots delivered in consumers' yards prices are about as follows:

	Iron.	Steel.
Ship Plates	2.25 @ 2.30¢	2.35 @ 2.45¢
Tank	2.25 @ 2.30¢	2.40 @ 2.50¢
Bridge Plate	2.30 @ 2.35¢	2.50 @ 2.60¢
Shell	2.40 @ 2.50¢	2.60 @ 2.70¢
Flange	3.00 @ 3.10¢	2.80 @ 3.00¢
Fire-Box	3.75¢	3.75 @ 4.25¢

Structural Material.—Business in this department continues to be of the most satisfactory character. Mills are full of work, in addition to which the current demand for small lots is very encouraging, and enables manufacturers to maintain firm quotations, with some tendency toward an advance on some specifications. For lots delivered in consumers' yards prices are about 2.30¢ @ 2.40¢ for Sheared Plates; 2.20¢ @ 2.25¢ for Angles, with 15¢ @ 25¢ more for the same in Steel; Tees, 2.7¢ @ 2.8¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—A very active demand is reported for all the numbers, and mills are in many cases quite unable to meet calls for prompt deliveries. Prices are firm, but not quotably different from those ruling for some time past, which are about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26	3.40¢ @ 3.50¢
Best Refined, No. 27	3.50¢ @ 3.60¢
Best Refined, No. 28	3.60¢ @ 3.70¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¼¢ @ 3⅓¢
Best Soft Steel, Nos. 21 to 24	3⅜¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26	3¾¢ @ 3⅞¢
Best Soft Steel, No. 27	4¢ @ 4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.	
Best Bloom, Galvanized, discount	60 @ 62½ %
Common, discount	62½ @ 67½ %

Old Rails.—Prices are almost nominal, as there is little or nothing doing at the seaboard; neither are lots of importance changing hands in the interior, although small sales are reported at $25.50 @ $26.50, according to quantity and point for delivery. Seaboard lots nominally $24.50 @ $25, f.o.b. cars, but no recent transactions.

Scrap Iron.—There is a continued good demand for desirable qualities of both Iron and Steel Scrap, for which prices are firm and tending upward. Sales chiefly at about the following prices: No. 1 Wrought, $22 @ $22.50, Philadelphia, or for deliveries at mills in the interior, $22.50 @ $23.50; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $15.50 @ $16.50 for Wrought Turnings, $11 @ $11.50 for Cast Borings, $26 @ $28 for Old Fish Plates, and $17 @ $18 for Old Car Wheels

Wrought Iron Pipe.—The pressure for early deliveries is unusually large, all sizes being in the most urgent demand. Prices firm at the following discounts: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Galvanized, 47½ %; Lap-Welded Black, 60 %; Boiler Tubes, 1¼ inches and smaller, 45 %; Boiler Tubes, 2 to 4 inches, 50 %; Boiler Tubes, 4½ inches and larger, 52½ %; Oil Well Casing, 50 %.

The Everett Furnace, under Superintendent Frank J. Keeley, for the week ending August 2, produced 832 gross tons of first-class Foundry Iron (24 hours' stoppage during the week), the largest day's yield being 145 tons, and the daily average 138¾ tons. Ore yield 41 % Metallic Iron. This Iron has secured a good reputation and is in large demand.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, August 11, 1890.

Pig Iron.—The situation remains unchanged. Consumers are not buying in large quantities, and on the other hand furnaces have very little to offer for immediate shipment. Under the circumstances trade is unusually quiet, but the outlook is considered fairly satisfactory. There are some few lots of Iron being sold at prices that are from 25¢ to 50¢ ₱ ton below prices as quoted below. These, however, are generally odd lots of from 30 to 50 tons, and it is doubtful if the same concessions could be obtained on an order of 500 tons or over. The scarcity of No. 1 Foundry and No. 2 Soft Irons continues, and furnaces are unable to fill orders for these grades with anything like prompt shipment. The outlook is considered fairly bright, and as prices have been fairly maintained through the dullness of the past two months, it seems quite probable that a higher range of values will be in order as soon as the fall trade sets in. For the present we quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$16.00 @ $16.25
Southern Coke, No. 2 Foundry,	15.25 @ 15.50
Southern Coke, No. 3 Foundry,	14.75 @ 15.00
Gray Forge	14.25 @ 14.50
Southern Charcoal, No. 1 Foundry	18.00 @ 18.50
Southern Charcoal, No. 2 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 2 Foundry	16.25 @ 16.75
Ohio Softeners	18.00 @ 19.00

Bar Iron.—There is no special change to note. Mills are well filled with orders and are unable to keep up with the demand. Some, in fact, have withdrawn entirely from the market, while others are taking orders for shipment after September 15. Prices are firmly maintained as follows: Lot from mill command 1.90¢. Small lots from store are quoted at 2¢.

Barb Wire.—Notwithstanding this is the dull season as regards the sale of Barb Wire, mills are receiving a full share of trade. Prices are cut to some extent, but it is generally done to meet outside competition, as the local mills are inclined to maintain prices, more especially now, as the advance in raw material is sufficient to warrant them so doing. Carload lots of Painted are quoted at from 2.85¢ to 2.90¢; Galvanized, 3.45¢ to 3 50¢.

Detroit.

WILLIAM F. JARVIS & Co., under date of August 11, 1890, say: There has been considerable activity during the week under review. Inquiries have been more numerous and have not been confined to any one grade of Iron or to any particular class of trade. Several sales of considerable magnitude have been made in this market Southern brands have been most active, with Lake Superior Charcoal a good second. Silvery Irons are in better demand, and consumers are asking that shipments on orders already placed be hurried forward. With a large number of inquiries and fairly active market, we quote as follows:

Lake Superior Charcoal, all numbers	$20.50 @ $21.00
Lake Superior Coke, Bessemer	20 00 @ 20.50
Katahdin (Maine Charcoal)	24.00 @ 25.00
Lake Superior Coke Foundry, all ore	19.25 @ 20.75
Southern No. 1	17.00 @ 17.50
Southern Gray Forge	15.25 @ 15.50
Jackson County (Ohio) Silvery	19.00 @ 19.50

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, August 11, 1890.

Pig Iron.—There is no particular change in prices on any of the grades that Southern furnaces are turning out. There may, perhaps, be a little tendency to stiffening up in prices, and Pig appears to be a little better, but as far as we have been able to observe there is no significant change in prices. The demand is healthy, and sales are being made fully up to capacity of the furnaces. The demand for Pipe Iron is especially heavy, as also for No. 1 Foundry. The furnaces that have been out of blast for repairs are now fast coming in, and there appears to be an effort among furnacemen to crowd their stacks to the utmost capacity, and this inclination seems to manifest itself also among those who are constructing new furnaces which are nearing completion.

Cleveland.

CLEVELAND, August 11, 1890.

Iron Ore.—Liberal sales of non-Bessemer Ore have occurred during the past week at prices averaging 40¢ below early season quotations. Probably 300,000 tons of Ore rather high in phosphorus have been purchased since August 1. Bessemer Ores are beginning to be in demand again, but there are no concessions in prices, and sales are not likely to occur at present. The receipts at lower lake ports aggregate 4,250,000 tons, against 3,500,000 tons at a corresponding period last year. Transportation rates are unchanged at $1.15 from Ashland, $1.10 from Marquette and 85¢ from Escanaba.

Pig Iron.—Sales of Bessemer Iron at $19.30 have occurred at valley furnaces during the past week, although the market is by no means active. All inquiries are for Iron for immediate delivery. Real activity is not looked for before September 15. Lake Superior Charcoal is still a prime favorite. Every one looks forward to a rushing trade and advanced quotations

within 30 or 40 days. Many of the furnaces are resuming operations, but with orders enough on hand to keep them engaged for several weeks. Quotations are nominally as follows:

Nos.1 to 6 Lake Superior Charcoal	$20.00 @ $21.00
Nos. 1, 2 and 3 Bessemer, per ton.	19.00 @ 19.30
No. 1 Strong Foundry, per ton..	17.80 @ 18.30
No. 2 Strong Foundry, per ton..	16.80 @ 17.30
No. 1 American Scotch, per ton.	17.80 @ 18.30
No. 2 American Scotch, per ton	16.80 @ 17.30
No. 1 Soft Silvery, per ton.....	17.50 @ 18.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton....	15.30 @ 15.80
Mahoning and Shenango Valley Red Short Mills, per ton.....	15.80 @ 16.30

Scrap.—The market is gradually improving. No. 1 Railroad Wrought at $21 @ $21.50 is selling freely; Wrought Turnings are quoted at $13.50; Old Car Axles, $26.50; Axle Turnings, $13.50 @ $14; Machinery, Cast, $13.

Old Rails.—Old American Rails, at $27.50 @ $28, are in fair demand.

Coke.—Furnacemen claim to have received assurances of a reduction in prices to go into effect early in September.

Nails.—The market is firm at $2.60 for Steel Wire and $2 for Common Steel Nails. Cut Steel Spikes at $2.25 are also selling freely.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, August 13, 1890.

Pig Iron.—If information to be obtained in Cincinnati at the moment is reliable, the market is upon the verge of a strong decline; in fact, if reports are to be credited, some of the decline has already been realized. Several large orders, aggregating about 30,000 tons, if not more, are afloat, and to secure these contracts, which are deemed especially desirable, an active and sharp competition has been engendered, and the result has been, or will be, a lowering of prices. There are rumors of a purchase of 13,000 tons Southern Coke by the local Pipe works, but this is denied by the agents of the company. That some purchases have been made on this account, however, is probable. At present the importance and bearing of the corn crop upon the business outlook of the country demands attention, because of the widespread interest manifested in the outcome of the crop and the general awakening of business men outside of speculators to the significance of the yield. It is estimated by the Government, and believed by the public, that there will be a shortage of 500,000,000 bushels in this year's crop, compared with the preceding crop, and that any improvement in condition that may take place now will be of no avail in increasing the yield; the plants may improve, but the fruit in the grain itself will fail to recuperate because of the destruction of the silk of the vitalizing element. During the drought it is reasoned by Iron men that the railroads having less grain to move will be less likely to place orders for cars, which will call for less Iron; that credits will be poor in spring, and that Iron sold in the West will prove a bad bargain for the sellers. In addition, while it is admitted that the consumption of Iron is large, that production is even larger, and that any increase in consumption is likely to be met by a much larger production, it is at the same time stated that 13 furnaces are in course of construction in Virginia alone, and many more are known to be under way in other portions of the South. We may be upon the verge of lower prices, but there is always a tendency to discount future conditions and often to overestimate the effect of prevailing elements, so that should a decline now take place a reaction will doubtless follow upon the entrance of large buyers, who are usually followed by a flock of small purchasers. At least such is the view of those who have Iron to sell. Prices are without quotable change, although a number of sales are reported at lower prices. Among the large sales are 2000 tons of No. 3 Southern Coke at $13.75, 1000 tons No. 2 Soft do. at $13.25, 1000 tons Gray Forge at $13, for delivery from now to September included, all cash, at Cincinnati. In addition, 500 tons No. 2 Foundry are reported sold at $14.25, cash, Cincinnati; 500 tons Pig, No. 2 Foundry, at $16.75, four months, Cincinnati.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, August 12, 1890.

Pig Iron.—Business during the past week was comparatively light. Demand as a rule is for immediate or near by delivery, although some consumers are willing to anticipate future wants at present prices. A city furnace sold 2500 tons Gray Forge for September and October at $15.50, cash, which is the ruling price at present for standard Irons. Other Irons not so well known have to be sold for 25¢ @ 50¢ ℔ ton less than the price quoted. Bessemer appears to be weaker than either Forge or Foundry Iron; it is being offered at $18.50, cash, but we hear of an offer to buy a lot of 5000 tons at $18, cash, having been declined. There is less inquiry for Foundry Iron than there was a few weeks ago, but prices are still maintained. We quote:

Neutral Gray Forge	$15.25 @	$15.50, cash
All Ore Mill	16.00 @	16.50, "
White and Mottled	14.50 @	14.75, "
No. 1 Silvery	17.75 @	18.00, "
No. 2 Silvery	16.50 @	17.00, "
No. 1 Foundry	17.00 @	17.50, "
No. 2 Foundry	16.25 @	16.50, "
No. 1 All Ore Foundry	18.00 @	18.25, "
No. 2 Charcoal Foundry	21.50 @	22.00, "
Coal Blast Charcoal	26.00 @	30.00, "
Bessemer Iron	18.00 @	18.50, "

It appears that we were in error in our report of last week in stating that a lot of Southern Iron sold here was from Sheffield, Ala., and had been shipped to Carnegie, Phipps & Co. and by them rejected in consequence of not having come up to analysis and specification. J. H. Heillman, who is agent here of the Sheffield Iron, says that the Lady Ensley furnaces, at Sheffield, Ala., never shipped any Iron to Carnegie, Phipps & Co., and that it was never rejected by the firm in question or any other firm in Pittsburgh, and that, on the other hand, fully one dozen mills in Pittsburgh are now using this Iron, and that the demand for the same is increasing. We cheerfully make the above correction in justice to the Lady Ensley Furnace Company, as well as to Mr. Heillman.

Muck Bar.—There is an active inquiry, and the market is strong. Our prices remain unchanged at $29 @ $29.50, cash, as to quality and delivery. Mills working on Skelp Iron are the largest buyers of Muck.

Manganese.—There is very little doing; large consumers are pretty well supplied and are out of the market. We hear of an occasional small sale of 80 % at $74 @ $75, Pittsburgh, but a large lot could no doubt be placed at a price very much lower than those quoted.

Manufactured Iron.—There is a large and increasing demand for nearly all kinds of finished Iron, and the mills for some time past, owing to the excessively hot weather, have been unable to get out anything like a fair output. For the past three days, however, the weather has been cool, and mills as a consequence are all running pretty full, and manufacturers hope to be able to fill orders with more satisfaction and promptness. Prices remain as last quoted: Bars, 1.80¢ @ 1.85¢; Plate and Tank, 2.10¢ @ 2.15¢; No. 24 Sheet, 2.85¢ @ 2.90¢; Grooved Skelp, 1.80¢ @ 1.85¢; Sheared, do., 2.10¢ @ 2.15¢, all 60 days, 2 % off for cash. The demand for Skelp is more urgent, possibly, than for any other kind, as the Pipe mills are working up to their full capacity.

Structural Iron.—The mills here are running very full, and the advance noted in our report of last week is well sustained. Contractors, in view of the season becoming well advanced, are now crowding their work as rapidly as possible, being anxious to get as much done as they can before the days shorten too much and bad weather sets in. Prices remain as quoted in our last report: Angles, 2.20¢ @ 2.25¢; Channels and Beams, 3.15¢; Tees, 2.80¢; Steel Sheared Bridge Plate 2.70¢; Universal Mill Plates, Iron, 2.55¢; Refined Bars, 1.90¢ @ 2¢.

Steel Plates.—Manufacturers report a continued good degree of activity, but thus far prices remain unchanged, as follows: Fire Box, 4.15¢ @ 4.75¢; Shell, 3.05¢; Flange, 3.20¢ @ 3.25¢; Tank, 2.75¢ @ 2 80¢.

Merchant Steel.—There is a fair business at unchanged prices; Tool Steel, 8¢ ℔ lb and upward, as to quality and brand; Crucible Spring Steel, 4¢; Open Hearth Steel, base sizes, 2¼¢; Crucible Machinery, 4¼¢; Bessemer Machinery, 2.35¢ @ 2.40¢; Tire Steel, 2.50¢ @ 2.60¢.

Nails.—The Cut Nail trade continues quiet, but is expected to improve as the season becomes more advanced. Steel Cut Nails are quoted in carlots at $1.85, 60 days, 2 per cent. off for cash, and Iron Cut Nails at $1.75. Wire Nails continue strong, and we now advance our quotations to $2.40 @ $2.45, 60 days, 2 per cent off for cash. The production of the latter has been comparatively light for some time past, and this, in connection with the increased cost of Rods, has had considerable to do with the recent advance.

Wrought Iron Pipe.—There is nothing new or especially important to note; mills continue very busy and likely to be so till the advent of the winter season. Some of them now have orders booked that will absorb their production well on into the fall. The oil and gas interests will require a great deal of pipe from now well on until the close of the present year. Prices firm, but unchanged. Discounts on Black Butt, 47½ %; on Galvanized ditto, 40 %; on Black Lap 60 %; on Galvanized ditto, 47½ %; Boiler Tubes—1¼-inch and smaller, 45 %; 2 to 4 inch, 50 %; 4-inch and larger, 52½ %; Casing, all sizes, 50 % off.

Billets and Slabs.—There appears to be but little inquiry for Billets and the market is weaker, although the mills both here and at Wheeling are reported as being pretty well sold. We apprehend that the weakness noticed is in sympathy with Bessemer Pig, which has been giving evidence of weakness for several weeks past. While we are not advised of any sales of Billets having been made below $30.50, cash, at makers' mill, it is probable that for a desirable order $30 would be acceptable. Smaller sales at $31 @ $31.50.

Old Rails—Continue scarce and prices are strong; we now quote at $27 @ $27.50 for Iron and $21.50 @ $22 for Steel and $22.50 @ $23 for long pieces of Old Steel Rails. The supply of both Iron and Steel Rails is small and there is a good deal of inquiry for the latter, both for remelting and relaying.

Wire Rods.—There is no apparent abatement in the demand and no increase in production; the mill at Beaver Falls and the one at New Castle, have not yet been started up. Both broke down some time ago and repairs have not yet been completed. In the absence of sales may be quoted at $45 @ $46, cash, at maker's mill.

Steel Rails.—The has been but little new business reported here of late, but both of the mills are well sold up and are not soliciting business, excepting for late fall and winter deliveries. There has been no change in prices for immediate or nearby delivery, but it is probable that an order for winter delivery could be placed at a lower price than has yet been quoted.

Railway Track Supplies.—Spikes remain unchanged at $2.10 @ $2.15, on cars at works. 30 days, according to character of order and delivery.

Old Material.—There is an increasing demand for No. 1 Railway Wrought Scrap and prices during the past week have advanced $1 ℔ ton. We are advised of sales of some 500 tons at $22.50 ℔ net ton; Old Iron Car Axles, $28 @ $28.50; Old Steel do., $28.50 @ $29; Wrought Turnings, $14.50 @ $15; Open Hearth Scrap Steel, $22.50 @ $23 gross ton; Cast Scrap, $15.50 @ $16 gross; Cast Borings, $12 @ $12.50; Old Car Wheels, $18 @ $18.50; sales Steel Bloom Ends at $22.50; Steel Locomotive Tires, $22 @ $23 net.

Coke.—There is a continued steady demand reported for Connellsville Coke, but there has been no change in prices for some time past. We continue to quote as follows: Blast Furnace Coke, f.o.b. at ovens, $2.15; Foundry Coke, $2.45; Crushed Coke, $2.65 ℔ ton of 2000 lb. Prices at other points are as follows:

	Foundry Coke.	Crushed Coke.
On Cars at Boston and points taking Boston freight rates.	$6.45	$6.65
On cars at Baltimore	4.62	4.82
On cars at Buffalo	4.70	4.90
On cars at Cleveland	4.15	4.35
On cars at Cincinnati	5.10	5.30
On cars at Toledo	4.80	5.00
On cars at Detroit	4.80	5.00
On cars at East St. Louis	5.65	5.85
On cars at St. Louis	5.80	6.00
On cars at Chicago	5.20	5.40
On cars at Milwaukee	5.30	5.50

Freight rates from the regions are as follows:

To Pittsburgh	$0.70
To Mahoning and Shenango valleys	1.35
To Cleveland, Ohio	1.70
To Buffalo, N. Y.	2.25
To Detroit, Mich	2.35
To Cincinnati, Ohio	2.65
To Louisville, Ky	3.20
To Chicago, Ill	2.75
To Milwaukee, Wis	2.85
To St. Louis, Mo	3.35
To East St. Louis	3.20
To Baltimore	2.17
To Boston	4.00

(By Telegraph.)

Forge Irons fairly active and steady at $15.25 @ $15.50, cash. But Bessemer Iron is weak, offering at $18.50, cash, and might be bought for less. Steel Billets dull and weak—$30.50, cash, is the asking price, but it is probable that for a round lot $30 would be accepted. Muck Bar strong, with a sale for prompt delivery at $30, cash, which is 50¢ ℔ ton higher than any sales have been reported, as yet. Wire Rods continue in demand; sale of 1500 tons $44.75, cash, at makers' mill. Advices from Shenango and Mahoning valleys report that the Bar mills out there are all oversold, and that prices nave been advanced.

Warrant Stocks.—During the month of July 6000 tons of iron were received at the yards of the Pig Iron Storage Warrant Company, and 2100 tons were taken out, leaving the net stock in yards August 1, 66,600 tons. Up to August 10 this had been increased to 68,800 tons, 2900 having been received and 700 taken out. This is an increase of 33,700 tons since January 1.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, August 13, 1890.

American Pig.—The market is very quiet on the whole, the prices made depending very largely upon circumstances. Occasionally soft spots appear and cheap lots can be picked up. Northern No. 1 Iron is relatively plentiful, and can be purchased at $17 @ $17.50 for good brands. In Southern Irons, No. 1 and No. 2 Foundry are relatively scarce, but No. 2 Soft is in ample supply and can be bought at $15.75 @ $16. There seems to be good evidence that at least one large Southern company is making liberal cuts under the prices generally supposed to be current in the Birmingham district. There has been considerable talk in the newspapers during the past few days, in some cases quite circumstantial, concerning alleged movements in a speculative way of an American syndicate in Scotch warrants. There is no doubt that some time since English speculators looked up the American market with a view to operations in warrants here, but the narrowness of the field discouraged them. We print elsewhere the text of the act proposed by the British Iron Association to check the injurious speculation in warrants in England. Still there appears to be little hope that anything will be done beyond the correction of minor abuses.

Spiegeleisen and Ferromanganese.—There have been some small sales both of Spiegeleisen and Ferromanganese, which we continue to quote $30 @ $30.50 for the former and $71 @ $72 for the latter.

Steel Billets.—Aside from little lots of small foreign Billets at $32.75, ex-ship, there is no business of any consequence. It is reported that foreign 4-inch square Wire Rod Billets have been offered as low as $31, ex-ship.

Wire Rods.—New York importers have made sales to Canadian mills at private terms. For American account nothing of any consequence has been done in foreign, which we continue to quote, buyer taking risk of duty, at $45 @ $46.

Swedes Iron.—Western jobbers are placing their orders. Assorted sizes, not including half rounds, half ovals, &c., are quoted $69 @ $70, ex-ship.

Melting Scrap.—After a long period of inactivity some business has been done in foreign Melting Scrap, of which moderate quantities are now coming out. Basic Scrap, not guaranteed, is quoted $23 ex-ship, while Basic, guaranteed, Phosphorus is held at $23.50.

Steel Rails.—The market has been somewhat disturbed during the past week by rumors of sales at low prices by Eastern mills for Western delivery. We have been unable to verity them. In the market tributary to the Eastern mills, East and South, very little business has been done during the week. We continue, as a nominal quotation, $31 @ $31.50, at mill, but it is intimated that the former figure could be shaded for desirable orders

Financial.

Shipments of specie and bullion during the last month exceeding $14,000,000, together with the absorption of money by the United States Treasury, the revenue from customs alone at New York being upward of $17,000,000, have caused the rates for money to rule high. Incidental advantages have been realized from the fact that gold shipments have ceased to be profitable. The favorable turn in this respect was aided by the improved state of affairs in South America, the drain from that source having been checked. Aside from an unsettled money market, a succession of bad crop reports have had a disquieting influence. Breadstuffs and grain in consequence were irregular, prices at first becoming easier, but closing excited and higher. The Government report on wheat seemed to confirm the worst, but evidence accumulates that there has been a persistent attempt to "rig" the market. September wheat sold up to $1.03½ and December to $1.06. The crop report did not affect corn materially, since it had been fully discounted. The Cincinnati *Price Current* says: "The chances appear to favor an aggregate production of wheat in Minnesota and Dakota about the same as last year, when the official estimate was 87,000,000 bushels. As near as we can reach conclusions for other spring wheat States, from official and other information, we incline to the view that present indications point to about 155,000,000 bushels as this portion of the crop, or practically the same as a year ago, when the record was 158,000,000. This, with 250,000,000 as apparently fully representing present indications of the winter crop, implies a total of 405,000,000 bushels as approximating this season's production." According to the same authority the corn yield is estimated at 1,600,000 bushels, giving the railroads plenty to haul. Another feature was introduced by labor troubles on the New York Central Railroad, threatening a prolonged interruption of traffic, but the difficulty is now supposed to be of short duration. Cotton is firmer, and already the forward movement from plantations has commenced, giving promise of a large amount of surplus money to help on the rapid industrial development of that section and indirectly of the whole country.

The stock market was irregular. The coal shares declined on reports that the coal companies failed to agree upon any plan to regulate the output. Sugar certificates have fallen some 4 % or 5 % below the price they touched soon after the announcement of the intended incorporation of the trust, due to delay in executing the plan. On Saturday news of the strike on the New York Central unfavorably affected all the Vanderbilt stocks, and the bad bank statement induced liberal selling of the other properties. On Monday dear money, the Government crop report and railroad troubles had a depressing effect. On Tuesday a reduction in exchange, the collapse of the strike on the New York Central and better prices in London caused our market to open strong, and there was a well sustained advance in the Vanderbilts, Reading and the grangers on a moderately large volume of business. There was no news of moment, except that that the freight traffic on the line of the New York Central was slow because of the smaller force employed. Strength was derived from a report that the Secretary of the Treasury would offer to redeem the outstanding 4½s at par and interest.

Governments were higher for the 4s, which were advanced to 124 @ 124½. Quotations as follows:

U. S. 4½s, 1891, registered	102⅝
U. S. 4½s, 1891, coupon	103¾
U. S. 4s, 1907, registered	124
U. S. 4s, 1907, coupon	124
U. S. currency 6s, 1895	112½

The bank return for the week shows a decrease of $7,673,550 in surplus reserve, which now stands at $1,286,000. The loans show a gain of $4,758,600; specie is down $6,871,600; the legal tenders decreased $2,804,600; the deposits other than United States are down $8,000,600. Money was active, loaning as high as 20 % on call. Time money loaned at 5 % for 60 days, 5½ % for four months, and 6 % for six months on approved collateral.

Commercial paper quiet. The best double name paper is quoted at 5½ @ 6 %, and prime single name at 6 @ 7 %.

Sterling exchange weak and lower. Posted rates were lowered ½¢ ℔ pound by some drawers, so that they are now $4.85 @ $4.89 for demand, or materially below the gold exporting point.

The new law requiring the purchase of 4,500,000 ounces of silver monthly, or so much thereof as may be offered at the market price, went into operation yesterday, August 13. Bids are to be received three times a week, on Monday, Wednesday and Friday, so that there will be 12 or 13 silver days every month, or 156 in a year, thus making the average quota for each purchasing day about 300,000 ounces, or 900,000 ounces per week. In the silver speculation there is a decline of nearly 2½¢ in the price of the certificates from the high figures recently attained; also a largely reduced volume of business, only 1,494,000 ounces having changed hands at the Stock Exchange, against 3,973,000 ounces the previous week.

The general merchandise markets show more speculative influence, as a consequence of sensational crop reports. Hog products sympathised with grain. Sugar was stronger, and better prices were realized for coffee. Tea advanced. Ocean freights were demoralized by the cessation of exports, partly due to the blockade on the New York Central. Dry goods jobbers notice the presence of Western and Southern buyers, who are more numerous than for many years at this time. The advance during the past three months in the price of leather has been very marked. Hemlock sole leather that in 1880 sold for 30¢ had fallen to 18½¢; it is now back to 21½c.

The returns of the commerce of this port for July show the continued large preponderance of imports, the total for the month being $52,892,000, or about $6,000,000 above the imports for the corresponding month last year. For seven months the total is $329,609,500, surpassing the record of any previous year. The exports for July amounted to $42,007,000, including $31,000,000 and upward in specie, chiefly gold, some of which is expected to return in the shape of silver when the new law takes effect. Exports for 12 months to June 30 show a favorable balance of nearly $87,000,000.

It is pretty well understood that there will be no essential changes in the Interstate Commerce act during the present session of Congress.

Suit was brought in Cincinnati against the assignee of E. L. Harper, the bank wrecker, by the Western National Bank of New York, for recovery on its claim of $200,000. The bank holds four $50,000 notes executed by Gahr and indorsed by Harper. Each note was secured by collateral in the form of 400 shares of Fidelity stock.

Imports of merchandise at this port for the week were $12,292,800, and the exports $5,371,000. Exports of specie since January 1 $8,800,800, of which $3,360,800 was silver, against $5,290,000 for the same time last year.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Anvils, 96; Arms, cs., 49
Chief of Bureau of Ordnance, Armor Plate, 1; Armor Bolts, box, 1
Caffin, B., Mach'y, cs., 2
Dolph, A. M & Co., Mach'y, cs., 2
Folsom Arms Co., Arms, cs., 6
Godfrey, C. J., Arms, cs., 5
Hartley & Graham, Mdse., cs., 46
Illfelder, B., Arms, cs., 3
Lau, J. H. & Co., Arms, cs., 16
Merchants' Despatch Company, 13 cases Cutlery for A. J. Jordan, St. Louis
Remington Paper Company, Machines, pgs., 35
Remington, C. R., Machines, pgs., 36
Rotterdam S. S. Company, Arms, cs., 11
Richard, C. B. & Co., Mach'y, cs., 8; Ironware, cs., 6
Schoverling, Daly & Gales, Mdse., cs., 12
Schwarzenbach & Co., Mach'y, cs., 8
Werlemann, H, Mdse., cs., 26
Wiebusch & Hilger, Anvils, 168; Mdse., pgs., 5
Witte, John G. & Bro., Cutlery, cs., 6
Wright, Peter & Sons, Hardware, ck., 1
Order—Files, cks., 8; Hardware, cks., 14; ditto, cs., 3

Metal Market.

Copper.—There has been no important change in the market for Lake Copper. Consumers have purchased very sparingly and seem to control ample supplies for immediate wants. No pressure in the offerings from any quarter is observed, but the belief obtains that the leading producers are opposed to prices being forced above 17¢, and that idea is strengthened by offers direct at that price for prompt and near future delivery. Whether deliveries running through the remainder of the year would be given at the same figures is not clear, but considered very probable. Arizona is offered freely at 15½¢, and casting brands are let go at 14½¢ in moderate quantities. James Lewis & Sons' report, Liverpool, August 1, says: "The past month has been notable for the sale by the French bankers of the balance of the Copper upon which they had made advances to the Société des Métaux, with the exception of 2000 tons Cape B.S., subject to litigation, and a few hundred tons of manufactured Copper. The reduction of the quantity of Copper held on account of the Société des Métaux from 179,000 to a little more than 2000 tons in the course of 16 months, the value having in the meantime advanced about £20 ℔ ton, shows not only good management on the part of the vendors, but also to what a low ebb stocks held by consumers in all parts of the world had been reduced. The enormous consumption of Copper during this period is also largely due to the greatly extended use of Copper Wire for electrical purposes, and of Sulphate of Copper for the prevention of disease in vines. As far as we can learn, the manufacture of Sulphate of Copper will probably absorb 20,000 tons more Copper this year than last.

The principal sales by the French bankers have consisted of 18,000 tons of Chile and other Copper lying in France, of which the Société des Métaux took 4000 tons, at the parity of £57 for G. M. Copper; of 2800 tons of Rio Tinto cake at £60. 5/ or £60. 10/ ℔ ton; of 1000 tons Anaconda matte at 11/4½, and 790 tons at 11/3 per unit, and of 1000 tons precipitate and 180 tons Chile regulus on private terms."

Pig Tin.—Speculative trading has been within very narrow bounds, and the market has offered very little inducement for ventures in any direction. Purchases by interior jobbers have averaged lighter than during the preceding week, and the consumptive demand has likewise been rather slow. However, supplies here appear still to be well controlled, while prices show practically no variation on either spots or future. Store quotations are about 21 10¢ for 5-ton lots and 21.20¢ @ 21.30¢ for smaller quantities. The Exchange quotations on 10-ton lots were 20.80¢ bid, 21¢ asked spot; 20.85¢ @ 21¢ August delivery; 20.90¢ @ 21.15¢ September delivery.

Pig Lead.—The spot supply is moderate, and offerings from the West are rather light, with holders very firm. It is doubtful that either prompt or future deliveries can be secured at less than 4.50¢ at the present time. Sales of moderate quantities are said to have been made in the West at relatively higher prices, and bids of 4.45¢ here are refused. No considerable amount of the metal has changed hands, however, nor does there appear to be any increase in the demand from consumers or greater speculative interest manifested in every quarter.

Spelter.—Cheap lots of Western have been closely marked off. Offerings for forward shipment are more reserved, and the supply for immediate delivery is light. A carload on the spot is said to have brought 5.55¢. Forward shipments are now quoted at 5.42½¢ @ 5.45¢, delivered, and 5.20¢ @ 5.25¢ in St. Louis.

Antimony.—Supplies are ample and prices slightly in buyer's favor, with 20½¢ quoted for Hallett's, 21½¢ for L. L. and 23½¢ for Cookson's.

Tin Plate.—Purchases by oil packers have been very fair again and at 5¢ @ 7½¢ advance on last week's prices. There has also been a very fair movement of other coke finish Steels at 10¢ @ 12½¢ advance, and the market for these varieties is very strong, while bright Charcoals and Ternes barely hold their own. The manufacturers of Penland J. B. Cokes, it is reported, are now working wholly on Steels. Quotations for large lines, on the spot, are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $4.55; J. B. grade, do., $4.65; Siemens Steel, $4.75; Bessemer do., $4.60. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $4.70; IX basis, $5.70; Siemens Steel, IC basis, $4.80, IX basis, $5.80. IC Charcoals—Calland grade, ½ X, $5.50; Melyn grade, $5.70; for each additional X add $1.50; Allaway grade, $4.85 @ $4.90; Grange grade, $5.00 @ $5.10; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $4.80; 20 x 28, $9.60; M. F., 14 x 20, $7.10; do., 20 x 28, $13.87½; Dean, 14 x 20, $4.55; do., 20 x 28, $9; D. R. D. grade, 14 x 20, $4.45; do., 20 x 28, $8.90; Mansel, 14 x 20, $4.50; do., 20 x 28, $9; Alyn, 14 x 20, $4.50; do., 20 x 28, $9; Dyffryn, 14 x 20, $4.60; do., 20 x 28, $9.10; Wasters—S. T. P. grade, 14 x 20, $4.20; do., 20 x 28, $8.60; Abercarne grade, 14 x 20, $4.20; do., 20 x 28, $8.50.

John J. Archer, metal broker, has removed to No. 20 Cliff street.

New York Metal Exchange.

The following sales are reported:

THURSDAY, August 7.

10 tons Tin, August.....20.95¢
25 tons Tin, September.....20.95¢

Coal Market.

The Anthracite Coal trade is without change in any respect. Coal agents' offices have a deserted aspect. The companies' list prices f.o.b. for August remain: New York harbor free-burning Stove, $4; Egg, $3.75; Broken and Chestnut, $3.65; Pea, clear free-burning, $2.50, f.o.b. There are 750,000 tons at tidewater. In addition, the Delaware and Hudson have 300,000 tons at Honesdale, the Reading have 300,000 tons near their mines, the Lehigh Valley and Jersey Central have large stocks at Mauch Chunk, and the Lackawanna have a quantity at Port Morris, N. J.

Anthracite Coal production for the week ended August 2, compared with the same period last year:

	1890. Tons.	1889. Tons.
Wyoming	380,595	474,425
Lehigh	180,960	131,939
Schuylkill	230,160	253,930
Totals	719,715	860,294
From January 1	18,862,563	19,176,428

Bituminous Coal is dull; freights low and weak.

It is reported that one of the Western steel rail mills has made a contract with a furnace company, based on a 60 per cent. sliding scale, the minimum being $30 for rails at mill and $18 for pig delivered.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, August 13, 1890.

The turn over of Scotch warrants has been large and the market has shown considerable excitement at intervals. Starting at about 46/, prices moved upward almost uninterruptedly to 47/9, and, after a partial reaction, again advanced to 48/11. From the latter point there was a decline to 48/ on Tuesday, and sales were made to-day at 47/6 @ 48/. The rise is attributed to a rumor that an American syndicate was buying up warrants with a view to controlling the supply. This rumor, together with heavy buying on the part of local "bull" operators, caused a large amount of covering of short accounts, under which prices were visibly affected. There has been considerable outside speculative buying, influenced in part by the favorable trade returns. Cleveland and Hematite warrants have been strengthened by the rise in Scotch, and advanced to 45/ and 56/6 respectively, with the trading on a large scale.

Improvement in the demand from the United States and the Continent has imparted additional strength to the market for Tin Plate, and the feeling at present is buoyant. Makers are advancing prices all along the line, and 14/6 is now the lowest quotation for Bessemer Coke Finished Steels, with 14/9 generally asked.

A new Steel works has been started in connection with the Dyffryn Tin Plate works at Swansea.

Block Tin declined to £94. 2/6, and for a time the market looked rather weak, but favorable statistics promoted buying and prices hardened. Subsequent realizations checked outside speculation and the market has since ruled quiet, though rumors are in circulation of an impending new move by leading operators.

Merchant Bar prompts advanced to £58. 5/, under demand for near futures, to cover sales on which deliveries are falling due. With this demand satisfied the market is again quieter, although firm. The rise in prices has checked the demand from consumers, who consider present prices artificial. Outside speculators are little disposed to buy.

Scotch Pig Iron.—There has been a further improvement in sales of makers' Iron and prices for most brands are again higher.

No. 1 Coltness,	f.o.b.	Glasgow	62/6
No. 1 Summerlee,	"	"	61/
No. 1 Gartsherrie,	"	"	60/6
No. 1 Langloan,	"	"	62/6
No. 1 Carnbroe,	"	"	49/6
No. 1 Shotts,	"	at Leith	63/
No. 1 Glengarnock,	"	Ardrossan	59/6
No. 1 Dalmellington,	"	"	52/6
No. 1 Eglinton,	"	"	50/

Steamer freights, Glasgow to New York, 2/6, nominal; Liverpool to New York, 10/.

Cleveland Pig.—Makers' prices are again higher, in sympathy with warrants, with a very fair business passing. Makers quote 44/6 @ 45/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Prices are up 2/6, but the demand from consumers shows only slight increase. West Coast brands, Nos. 1, 2 and 3, 56/6 f.o.b., shipping port.

Spiegeleisen.—A fairly active demand continues and prices remain firm. English 20 % quoted at 100/, f.o.b. shipping port.

Steel Rails.—Inquiries are fair, but no really large orders are placed, and prices show little change. Heavy sections quoted at £5 @ £5. 5/ and light sections £5. 15/ @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—The market quiet and without change. Makers quote at £4.17/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Demand is moderate and prices are hardly steady. Bessemer 2½ x 2½ inches, £4. 17/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—A light business at about former prices. Bessemer quoted at £4. 17/6, f.o.b. at N. W. England shipping point.

Old Iron Rails.—There is little demand at present prices, which remain as before. Tees quoted at £3. @ £3. 2/6, and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—Demand is moderate and prices are unchanged. Heavy Wrought quoted at £2. 12/6, f.o.b.

Crop Ends.—The market is quiet, with values as before. Bessemer quoted at £2. 17/6 @ £3, f.o.b.

Tin Plate.—The market strong at the advance quoted and quite active. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	16/3 @ 16/6
IC Bessemer Steel, Coke finish	14/9 @ ....
IC Siemens " " "	15/ @ ....
IC Coke, B. V. grade	14/3 @ 14/6
Charcoal Terne, Dean grade	14/ @ 14/3

Manufactured Iron.—Business in this department has been rather more active. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	9	0	0
" Common "	7	2	6	@	7	5	0
Staff. Bl'k Sheet, singles	7	15	0	@	7	17	6
Welsh Bars (f.o.b. Wales)	6	2	6	@	6	5	0

Tin.—There is little doing, and the market closes easy. Straits quoted at £94. 2/6 @ £94.10/, spot, and £95 for three months futures.

Copper.—Operations moderate and prices slightly irregular. Merchant Bars quoted at £58 @ £58. 5/, spot, and £57. 10/, three months futures. Best selected, £64.

Lead.—Demand continues fair and prices are firm. Quoted at £12. 17/6 @ £13 for Soft Spanish.

Spelter.—Prices barely steady and the demand is moderate. Quoted at £23. 7/6 for ordinary Silesian.

Erastus Wiman's vast project to connect Staten Island with Brooklyn by means of a submarine tunnel is again occupying space in newspaper discussions and is so near becoming a reality that, according to "a fully trustworthy source" Heman Clark, the aqueduct contractor, will undertake the work of construction when released from his present engagements. The plan is to build a two track tunnel under the Narrows, beginning on the Staten Island side, near St. John's Church, close by Fort Wadsworth, and striking Long Island near Fort Hamilton, connecting with elevated and surface railroads to various points of Brooklyn and with the Long Island Railroad at Thirty-ninth street, or further down the island. The estimated cost of the tunnel at the Narrows is said to be $1,000,000 a mile. But in reference to this, experience teaches that it is often less difficult to make plans than to execute them.

The Growth of Lake Cities.—The Cleveland *Leader*, under the heading "The Metropolis of the Lower Lakes," gives, in the following table, the comparative population of Cleveland, Buffalo and Detroit at the beginning of each decade during the last 80 years. The figures are from the census returns, those for 1890, it explains, "being in round numbers, as they are not yet given exactly, but are supposed to be within 500 of the precise figures:"

	Cleveland.	Buffalo.	Detroit
1810	57	1,508	770
1820	150	2,095	1,492
1830	1,075	8,653	2,222
1840	6,071	18,213	9,102
1850	17,034	42,461	21,019
1860	43,883	81,129	45,619
1870	92,829	117,714	79,577
1880	160,446	155,134	160,340
1890	265,000	255,000	207,000

"Round numbers" are not always to be depended upon.

The Cramps have just turned out from their yard, for the Merchants' and Miners' Transportation Company, the steamship Essex. She will be available as a Government cruiser in case of war. Her dimensions are: Length, 260 feet; beam, 40 feet; depth of hold, 35 feet 6 inches. The machinery is of the vertical triple expansion type, the cylinders measuring respectively, 24, 39 and 59 inches, with a stroke of 48 inches. The boilers, four in number, will carry an average of 155 pounds to the square inch, the firing being maintained by natural draft. It is expected that the Essex will do 14 to 15 knots easily when the machinery is in good order.

On the 7th inst. a charter was granted to the Glass Manufacturers' Exhibit Company, of Pittsburgh, with a capital stock of $10,000. The directors are George A. Macbeth, A. Adams, Daniel Ripley, James E. Duncan, James T. Hamilton, Paul Zimmerman and R. E. Woods, all of Pittsburgh. The company were formed for the purpose of manufacturing glass at the coming Pittsburgh Exposition. A plant is being erected and will be ready for operations when the exposition opens.

The Italian battle ship Andrea Doria has recently undergone a successful series of full power trials off Spezzia. She, the Ruggiero Di Lauria, and the Francesca Morosini, form a group very similar to the Admiral type of the British Navy. They are of 11,000 tons displacement, 328 feet long and 65 feet 4 inches beam. Their engines, of 10,000 horse power, were intended to give them a maximum speed of 16 knots. The armament consists of four 110-ton Elswick guns, mounted in two barbettes, two 6-inch quick firing guns and 12 machine guns. The machinery is of the three cylinder inverted vertical triple expansion type, working twin screws, and the eight large double ended boilers are placed in closed stokeholds. The result of the runs was a mean horse power of 10,500 and an average speed of 16.1 knots. The coal was unpicked and the stokers were Italian. The preliminary trials of the Re Umberto, 20,000 horse power, are expected to take place in a few weeks at Naples.

The Finance Committee of the Senate will propose a duty on pig tin.

HARDWARE.

The Condition of Trade.

Advices from all parts of the country indicate a very cheerful feeling in all classes of trade, and the expectation of good trade is universal. Stocks are generally moderate and orders are satisfactory in amount. Manufacturers are generally busy, without being behind their orders.

Door Locks continue in the unsettled condition which has been characteristic of the market for the past year. Manufacturers are still selling almost entirely at net prices, which are very much lower than they have been in past seasons.

The effort to control the Strap and Hinge manufacture, to which we referred last week, has apparently failed, at least for the present, on account of the impossibility of securing a general agreement of manufacturers. Quotations still continue uneven, and some of the makers are quoting as low figures to the smallest trade as are given to the largest jobbers.

Under date of the 1st inst., the Geneva Tool Company, Geneva, Ohio, announce that all quotations and terms governing the sale of both Steel and Wood goods during the past season terminated July 31, and that prices for current orders and for next season's supply on both lines will be advanced. Steel goods will be sold during the coming season f.o.b., with freight allowance to equalize with the nearest factory, at advanced prices, which will be given on application.

In spite of the agreement between the manufacturers, prices of Cast Butts are irregular, and some makers are making low quotations. It is thought that the present prices of Wrought Butts are having an effect on Cast Butts.

Tackle Blocks continue to decline, and there seems little reason to hope for any advance in this line with the present strained feeling that exists among the different manufacturers.

Chicago.

(By Telegraph.)

The activity in both shelf and heavy Hardware continues and the spring trade has at last run into the fall trade without the usual summer intermission. Jobbers are now shipping large quantities of Sheet Iron, Tin Plate, Stove Boards, Coal Hods, Elbows, &c., but at the same time report a continuance of the heavy demand for Hardware proper, which has been such a feature of the past three months. The tendency of prices is upward, and shrewd merchants are looking forward to anticipate developments in that direction. Heavy Hardware jobbers complain of the mills and factories which supply them with goods falling far behind in deliveries and thus causing much annoyance. Collections are good.

Nails.—Manufacturers' agents report an improvement in the demand for Cut Steel Nails. Inquiries are not only numerous but are leading to actual business in many cases. In this respect August promises to be a good month. The usual quotation is still $1.85 at mill, but concessions are made on good averages. Wire Nails are still scarce and hard to get. Those who are able to make deliveries are asking $2.55 and upward. Chicago Jobbers are holding prices very firmly now at $2.60 for Wire and $2.05 for Cut Steel, with 5 cents off for carloads.

Barb Wire—Is now very quiet, as farmers are too busy elsewhere to build fences. A heavy demand is expected as the fall advances, and prices will probably be higher. In fact, the makers are now asking as high as 3 cents for painted, on account of the high price and scarcity of Wire Rod. Jobbers are still selling at $2.90 for Painted and $3.50 for Galvanized.

Cut Nails.

While not quotably higher, the New York Cut Nail market is firmer, concessions which have been frequent during the past two months not being so readily made now. We quote $1.75 @ $1.80 for Iron Nails in carload lots on dock. It may be noted that 10d Nails are scarce in this market.

Wire Nails.

Wire Nails are scarce, certain sizes in particular, and the majority of sellers are asking higher prices. Carload lots may now be quoted $2.45 @ $2.50 for the regular car.

Plumbers' Brass Work.

The following are the revised lists of Plumbers' Brass Work and Steam Work, published under date August 1, 1890, by the Haydenville, Mfg. Company, New York to apply to the United Brass Company's catalogue, 1885:

	Dis. per cent.
Ground Key, finished Bibs and Stops	60
" " Rough Stops	60
" " " Bibbs	55
Racking Lock, Globe, Kerosene and Liquor Cocks	50
Iron Body Petroleum Cocks	50
Bottling Cocks	50
Beer, Ale, Bar and Counter Cocks	50
" Bungs	50
Boiler Cocks	50
Cooler Urn Cocks	50
Ground Key Basin	60
" " Bracket Basin and Shampooning Cocks	50
Compression Basin Cocks	60
" " and Sink Cocks	50
" Pantry Cocks	60
" Double Pantry Basin and Shampooing Cocks	50
Shampooing Sprinklers	60
Double Compression Bath Cocks	60
Chain Stays	55
Compression Plain Tray and Bath Bibbs	60
Stops, Urinal, Sill, Hydrant, Hopper and Ball Cocks	55
Moore's Patent Self Closing Work	50
Boston Self Closing Work, not illustrated	50
Tucker's Patent Self Closing Work	25
Self Closing Telegraph Work	50
Low Down Self Closing Basin Cock	40
Moore's Patent Self Closing Basin Cock	50
Self Closing Hopper Cocks and Bronze Work	55
Peck's Improved Trimmings	25
" " Bibbs and Basin Cocks	70
" " No. 6 Basin Cock	65
" " Double Basin Cock	60
" " Pantry and Self-closing Basin Cocks	60
Peck's Improved No. 1 and No. 4½ Double Bath Cocks	70
" " Double Bath Cocks	60
" " Special Work..on application	
" " Anti-Water Hammer	25
" " Boston Waste Cocks and Basin Pulls	55
" " Foley Basin and Bath Valves	30
" " Plugs and Strainers, Trap and Deck Screws	60
Bath, Sewer, Vacuum, Cistern and Pump Valves	55
" Chain	65
" " with Snaps	40
Basin Clamps and Strainers	55
Reversible Filters	40
Croton Filters, Name Plates and Urinal Shields	55
Brass Ferrule, (except 2 in., 12c. and 4 in. 24c. each, net)	60&10
Boiler Couplings	60
" " Gro'nd Face, per set / Net.	$1.05
" " Plain Face, " \ Net.	$1.00
Water Back, Valve and Plain Couplings	55
Soldering Nipples and Unions	60&10
Union Joints	57½
Hydrant Nozzles and Handles, and Checks and Guides	55
Hose Goods and Street Washer Screws	60
Beer Pumps	55
Brass "	60
Lewis Patent Hydrants and Street Washers	60
Test and Proving Pumps	55
Plumbers' Force Pumps	55
Tack Molds	55
Brass Ferrules, Extra Heavy Pipe, each 2½ in., 15; 3½ in., 25; 4½ in., 35 net.	
Brass Globe Valves	65&10
Finished Brass Globe Valves, with finished Brass Wheels	45
Brass Globe Angle and Corner Valves, except Fig. 1513	60
Brass flanged Globe Valves	65&10
Snow's Patent Combination Globe and Check Valves	40
Brass Globe, Angle and Radiator Valves	65&5
Lock Shield Radiator Valves, with loose swivel, advance list-price 13 cents each; if with fiber disk add 15 cents each to list	
Keys for Radiator Valves	65&5
Special Light Key for Radiator Valves, 14 cents each, net.	
Hill's Patent Radiator Valves	45
Frink's " " "	65&5
Jenkins' " " "	60&5
Wood Handles for Radiator Valves	65
Brass Cross and Check Valves	65&10
Angle and Cap on Side Check Valves	60&10
Special Check Valves	55
Brass " "	65&10
Special " "	30
Jones' Patent Indicating Check Valve	30
Van Weis' Swing Check Valve	35
Hose Valves	65&5
" "	30
" "	50
Jenkins' Patent Valves	60&5
Frinks' " "	65&5
Hill's " "	45
Brass Safety Valves	65&5
Safety Valves, with Yoke and Springs	40
Relief Valves	35
Brass Vacuum Valves	55
" Whistle "	60&6
" Balance, Back Pressure and Foot Valves	55
"Haydenville" Double Gate Valves, to 4 inches, inclusive	40&10
"Haydenville" Double Gate Valves, about 4 inches	40
Brass Butterfly Valves	47½
" Throttle "	55
"Wilson's" Patent Throttle Valves	30
"Adam's" Patent Y Valves	40
Balance Governor Valves	15
Chronometer Governor Valves	15
Pressure Regulating Valves	15
Pump Valves	47½
Steam Service, Meter and Union Meter Cocks	60&5
Lock Meter Cocks	40
Steam Whistles and Water Gauges	65
Steam and Water Column	50
Oil Cups, except Elbow Oil Cup	65&5
Elbow Oil Cups	60&5
Clow's and Hall's Patent Oil Cups	40
Oil and Tallow Cups	50
Lubricators	65&5
Air Valves	65&5
"Davis'" Patent Air Valves	25
"Marsh" " "	25
Air Cocks	65&5
Steam Gauge Cocks	60
"Prindle's" Syphon Cocks	25
Steam Gauge Syphon	30
Gauge Cocks Compression	60
" "	50&10
Cylinder Cocks and Steam Bibbs	50
Lard Tank Cocks	50
Hose Cocks	50
Swing and Expansion Joints	50
Oil Pumps	50

Test Pumps	55
Heavy Gas Fittings	60
Alcohol and Ether Cups and Oil Cock	55
Brass Steam Fittings, Rough	60
" " Finished	25
Fine Thread Fittings, Rough	60
" " " Finished	25
Brass Tubing	at market rates
" Floor and Ceiling Flanges	30
Union Joints	57½
Soldering Nipples and Unions	60&10
Miscellaneous Fittings	50&10
Holland's Lubricator	50
Iron Body Globe, Angle Check Valves, except 10 and 12 inch	70
Iron Body Globe, Angle and Check Valve, 10 and 12 inch	65&10
Iron Body Safety Valves	65&10
Iron Body Throttle, and Back Press Valves	65&5
Butterfly Valves	60
Iron Body Foot Valves and Expansion Joints	65&5
Iron Cocks with Brass Plugs	60&5
All Iron Cocks and Valves	65&5

American Goods in Germany.

Under this heading, Frank H. Mason, Consul General, United States Consulate General, of Frankfort-on-the-Main, in a report under date March 20, 1890, to which we are indebted for the following information and from which we quote, gives some very interesting facts in regard to the position of American goods in Germany, and makes some pertinent suggestions in regard to exporting. It is generally known, he writes, that industrial conditions in Germany, and particularly the relations between local manufacturers and foreign commerce, have undergone important modifications within the last 15 years. The exact place which Germany is to occupy as an industrial nation, self-sustaining and independent of all foreign products, except raw materials, is not yet clearly defined. In noting the more obvious tendencies of the present market, the following questions are asked: What and how much of our American products do the Germans now need? Is the demand likely to be permanent, and do our exporters make all reasonable effort to comply with the preferences of the German people and the conditions of trade in the markets of this country? Is the field here worth working, and if so, by what methods can the best results be reached?

The export of American manufactured goods into Germany on a large scale began about the years 1873 and 1874. The United States exhibit at the International Exhibition at Vienna, 1873, became the center of interest to a large number of German visitors. Many importers of American goods date the inception of these enterprises from that time. From 1873 to 1877–78 Germany was a fertile field for American enterprise. In 1877 there were not less than 50 depots and agencies at Hamburg, Bremen, Berlin, Frankfort and other points in the German Empire, for the sale and introduction of American goods, since which time their business has rapidly fallen away. Meanwhile, the intervening years have witnessed an enormous development in the manufacturing energy of Germany. They have boldly entered the field as exporters of manufactured goods to South America, Mexico, Asia, Africa and the islands of the sea. The Imperial Government has given them every possible assistance and encouragement. Their methods of doing business are broad. Not content with sending circulars in the home language to their consuls abroad, after the American plan, they have trained young men especially for service as foreign salesmen, sending them into new markets, opened stores and filled them with goods, studying the local tastes and needs of the people which are peculiar. Any American who has seen a German woodman picking away at the trunk of a tree with the clumsy, narrow, thick headed Hatchet, or has watched a peasant swinging his short, broad heeled Scythe (which he sharpens with a Hammer), attached to a straight Snath, with its long, awkward, projecting handles, would suppose that the wide, thin, accurately balanced American Axe and light bent ash Snath, with its long, slender, grass Scythe, would only have to be shown in Germany to be immediately and permanently adopted. But the fact proved otherwise. A Hardwareman, to introduce the American Scythe and Snath, gratiously distributed six of them to as many representative farmers on market day, only to have them returned, not one having been able to use them. Similarly with Axes, of a dozen purchased from an American agent 11 years ago, still the larger part of them remain in stock. Other classes of American goods have found ready sale, as, for instance, Cast Steel Hay Forks, Manure Hooks, Spades, Shovels, Hoes, Cabinet Organs, Sewing Machines, Boot and Shoe Machinery, Reapers, Mowers, Cultivators and a large number of other machines and tools. The last three or four years has demonstrated pretty thoroughly what things the German people would buy and what they would not. Where the Germans export their manufactured products they do not send goods not knowing the wants or tastes of their customers, thereby causing delay in getting a foothold and piling up articles not saleable; but it is the duty of their travelers in visiting the customers to find out any desired alterations in pattern, quality, packing or forwarding of goods, which wishes are followed out at the home office.

For about ten years industrial and commercial expansion continued prosperous and unchanged in Germany. But the year 1888 failed to show the usual increase in German exports, and 1890 revealed a falling off, which was all the more ominous from the fact that both France and Great Britain substantially increased their exports last year. Many American articles, which have found a ready sale in Germany, have been copied, and there remains only a limited sale for the original imported article. It is clearly seen that the methods of German manufacture must be improved by better machinery and more skillful management, and to hold their footing in foreign markets the quality of their products must be improved without advancing their cost. First and most important, they need the most modern and improved machinery for working wood, metals, leather and textile materials. They will be obliged in many cases to adopt the American system of classifying the various processes of factory work, by which each operative works constantly on a certain piece or part. The Germans are not yet educated to making machinery or implements with interchangeable parts. There are to-day in Frankfort three establishments for the sale of American and English shoemaking machinery, and are all prosperous.

It should be understood that it is useless to send to Germany for general sale any invention that is not securely protected by a German patent. If it is valuable it will be assuredly copied unless the patent is vigorously defended, not by the long and costly suit which is involved by an action for damages for infringement, but by the simple, direct legal process which there enables a patentee to prevent a rival from making and selling a patented device.

There is an inevitable bill of complaints, which the American consul always has to hear when engaged in commercial missionary work. Putting aside, he writes, all merely general and petulant grievances, it is found that there are tangible grounds of complaint against very many American exporters on the following points:

Hardness of Terms.—They insist upon cash against railroad receipts or shipping bills at seaport, while English, French, Belgian and Austrian manufacturers are glad to sell to German importers on three months' time.

Bad and Insufficient Packing.—American manufacturers uniformly pack machinery or other goods for shipment to Europe, Australia or South America just as they would to send it by rail into an adjoining county or State, and consequently American goods landed after a long sea voyage are often so dirty, rusty and damaged as the result of inefficient packing that the loss from such deterioration consumes the profit or entails a loss to the importer. All this has been told and retold a thousand times in consular reports from every quarter of the globe. The pity and misfortune is that it is still too often true.

Careless and Stubborn.—American shippers are uniformly careless and stubborn in respect to special directions from abroad about classifying and packing. It is well known that import duties in Germany are assessed upon the weight of merchandise so many marks per 100 kg. The rate per kilogram varies greatly, according to the material of which an article is composed and the degree to which it has been worked. Each class of goods should be packed separately, because, if merchandise of several grades is packed in the same case, the contents must be all taken out at the German custom house, weighed and repacked separately; otherwise the whole lot is assessed at the rate applicable to the highest dutiable article that each case contains. Greater care on the part of our shippers to follow precisely instructions in this respect would obviate many just and serious complaints.

American exporters are very generally careless about giving exact information about the bulk and weight of their goods. The German merchant or manufacturer hears of an American fixture or machine which he would like to try. He ascertains from the price-list what its cost would be on board a freight car at the place of manufacture. Before he can tell what it will cost set down at his own door he must know its smallest bulk, by which to estimate the cost of sea freight, and its weight, from which to calculate duties and interior transportation. He writes for exact information on these points, and very often receives a reply praising the article, describing the growing demand for it in America, and perhaps offering a discount from the list price, but nothing about weight or bulk.

Cases of actual dishonesty, in which firms receiving cash orders for machinery or other goods ship old, inferior stuff which is unsaleable at home. A company ordered through a Frankfort house a steam engine of particular weight, pattern and speed adapted to its purposes. The price paid was that of a new engine. It came, was set up and proved to be an old, worn out machine, the valve seats and other concealed points of friction being so worn as to be utterly unserviceable. On scraping the painted portions layer after layer of paint of different colors was found, showing that the engine had been painted again and again during its years of service. One such incident makes a great deal of talk, and the importer referred to not only lost about $2000 by the transaction, but has never been able to sell another American engine of similar type in this region.

Another complaint is that in sending machinery abroad one or more small but essential parts are omitted, and the instructions given for putting them together, operating and taking care of them are incomprehensible to German machinists. The fact should be realized that mechanics in foreign countries lack the ready, ingenious intelligence which characterizes the better class of American workmen, and which enables them to think out and unravel a difficult situation. The foreigner

knows what he has been taught and has done, but very litle more, and he is not fertile in expedients. Every experienced person knows that a really competent American engineer-fireman will, by skillful firing, oiling and management, get from 15 to 30 per cent. more work out of his engine than will be done by a native engineer anywhere in Continental Europe; and American engine builders, estimating for plants to be set up abroad, should take careful account of this disparity. All instructions and descriptions should be made simple but thorough and complete down to the smallest detail, as though intended for a novice. The German Empire, like the other manufacturing nations of Europe, is deeply and earnestly engaged in looking after its own interests, and an important article in its creed is to sell as much and buy as little as possible abroad.

Items.

We are advised that in July of the present year the J. G. Jenkins Mfg. Company were organized at Oswego, N. Y., for the manufacture of Burglar Proof Sash Locks and Ventilators, formerly made under Trimby's patent. Since the closing of the factory, a year ago, a line of new Locks has been perfected, adapted to any kind of window. A new catalogue is now being printed which will show the Economy, Perfection and Giant Sash Locks and Ventilators, also a Lock adapted for inside blinds.

Jesse Jones & Co., 615 Commerce street, Philadelphia, Pa., advise us that the use of Hardware Shelf Boxes is becoming more general every year, and that they are now being supplied to all parts of the country by them. Jones & Co. are manufacturers of Hardware Shelf Boxes, Druggists' Paper Boxes and Confectioners' Fine Boxes.

The Waltham Emery Wheel Company, Waltham, Mass., are about taking possession of their new buildings, which have been necessitated by the growth of the business. The main building is described as being of wood, 50 x 240 feet on the ground. The second story will at present extend back about 90 feet. The office connected with the main building is 30 x 40 feet, the second story of which is devoted to draftsmen. The boiler and engine rooms are on the north side of the building; a vault with 1-foot thick wall connects with both stories of the office, and the shipping room, 24 x 36, is on the northwest corner of the main building. The plant is employed in producing emery wheel from ¼ inch to 48 inches or more in diameter.

Irving W. Fox, Rochester, Minn., is offering his Reliable Tank Pump, which is described as being constructed with large capacity, to supply water rapidly in filling Thresher Tanks, and for use in shallow stock wells. Many reasons are enumerated in his circular why it is to be preferred to other pumps of the same character.

Attention is called to a notice on page 54 of this issue, of a large special and peremptory auction sale, on August 20, 1890, of Gray Agate Ware, seconds. The entire sale is without reserve, and as all goods will be packed in regular cases, and include all the different patterns and sizes of these goods, the sale will doubtless receive the attention from buyers it deserves.

On Tuesday, the 5th inst., the committees of the window glass manufacturers and window glass workers met at Pittsburgh, in conference, and adopted last year's scale of prices for the ensuing year. After the adoption of last year's wages scale, the time for resumption of work was considered. An agreement was not reached on this point. The time will probably be fixed by a convention of manufacturers and will depend to some extent on the further action of Congress on the tariff and on the demand for glass during the next 30 days.

The Chicago Nickel Works have consolidated with the Goodrich Mfg. Company, and have removed their office and factory to 125 and 127 Ontario street, corner of Franklin street, Chicago. They are manufacturing Sewing Machine Attachments, light Hardware specialties, Jewelers' Tools, Milk Shakes, Cork Extractors, Brass and Iron Castings, &c. Their facilities for electro plating are now very extensive. In fact, the consolidation of these two concerns makes the new establishment one of the largest, if not the largest, of its kind in the West. G. L. Reimann is president of the company and Frank L. Goodrich is secretary and treasurer.

The Salem Wire Nail Company, of Salem, Ohio, will soon break ground for a Rod mill, capacity 125 tons per day, to supply their Salem and Findlay, Ohio, mills.

Papers were signed on the 6th inst. concluding the negotiations for the transfer to Aurora, Ill., of the plant of the New Haven Wire Goods Company, of New Haven, Conn The company will be presented with a building costing $30,000, and will have 125 men at work at Aurora on or before December 1.

The Salem (Ohio) Lock Works, organized in May last, capital stock $100,000, will break ground for new buildings next week. O. R. Cook is president; J. D. Tollerton, secretary and treasurer; N. Platt, vice-president; will manufacture O. R. Cook's Patent Locks, Window Fixtures, and patent novelties. The buildings will be of brick, three stories, ready for use October or November, 1890.

The Chicago Safe and Lock Company have secured a tract of land at Waukegan, Ill., which is on Lake Michigan, north of Chicago, and will shortly erect a large factory for the manufacture of their specialties. Waukegan has become an important point for manufacturing enterprises through the extension to it during the past year of a belt line or road intersecting all railroads entering Chicago.

Attention is directed to a notice on page 55 of this issue of a receiver's sale of property belonging to the Sanford Fork and Tool Company, Terre Haute, Ind., September 18, 1890. Full particulars will be furnished on application to the receiver.

The largest and most disastrous conflagration that has visited Seneca Falls, N. Y. in 30 years, broke out about 2.30 a. m., July 30, in the rear of the Pew Block, on the south side of Main street, and in less than three hours 3 acres of the main business portion of the village were in ashes. It is estimated that the loss will amount to nearly $700,000, on which there is but $100,000 insurance. Garnsey & Waller and Phelps & Hawley, both Hardware firms, whose places of business were on the north side of Main street, suffered loss. Garnsey & Waller's loss is estimated at $15,000, while that of Phelps & Hawley is not given.

The Hardware business of R. E. Tolbert & Son, Chambersburg, Pa., has been sold to Shirk & Sollenberger, who take possession at once. "Tolbert's Hardware store," as it has been familiarly known, has for 20 years been regarded as one of the most reliable business establishments of the place. Mr. Shirk has been in the employ of the old firm 14 years, while Mr. Sollenberger is a farmer who stands high in the community.

The Ludlow Saylor Wire Company report a gratifying demand for their products, and state their sales during the past month have been unusually heavy. Among the contracts recently secured by them is one for the furnishing of all metal work to be used in Portland place, St. Louis. The work consists of two pair of Carriage Gates, 25 feet wide, four pair of Entrance Gates, one Pedestal Lantern, two Bracket Lanterns, two Window Grilles, and 400 feet of Wrought Iron Ornamental Fence. This work is all executed from designs made by Ludlow Saylor Wire Company, and when completed will be one of the handsomest inclosures that they have built for some time. This firm make a specialty of art metal work in wire, brass, and wrought iron from original designs, and are shipping goods to all parts of the country. They have just completed an order for a bank in Mauch Chunk, Pa.

A. J. Jordan, St. Louis, Mo., has received a shipment of case goods from his factory in Sheffield. Prominent among the goods are a number of handsomely designed Ladies' Companion Cases, one of which was illustrated in *The Iron Age* some weeks since. A number of new designs in Shaving Cases were also received filled with AAAI Cutlery.

The Hopkins & Dickinson Mfg. Company, Brooklyn, N. Y., under date August 1, 1890, issue a price-list, No. 10, referring to their illustrated catalogue of 1890. General discounts are given as Sash Locks 40 per cent.; all other goods 10 per cent.

Staver & Walker, New Market Block, Portland, Ore., send us a large 50-page pamphlet containing a prospectus of the Second Annual Exposition of the North Pacific Industrial Association of Portland, Ore. The exposition opens September 25 and closes October 25, 1890. A large portion of the book is taken up with Portland and the exposition, giving cuts and descriptions of many public buildings. The balance of the space is devoted to advertising and information relative to the exposition. The inside page of the front cover is occupied by the advertisement of Staver & Walker, and giving a view of their late exhibit. They are large dealers in Brick and Tile Machinery, Vertical Stationary, Portable and Marine Engines and Boilers, Saw Mills, Farm, Dairy and Mill Machinery, Harness and Horse Goods, Vehicles of every description, &c. The enterprise and push of the West Shore City is commendable, and the prominent position taken by Staver & Walker indicates that they are not behind the times.

Wm. Easterbrook, 311 Cherry street, Philadelphia, Pa., manufacturer of Coal Hods, Water and Fire Buckets, Ventilators, Chimney Tops, Piping for Shaving Exhaust for Planing Mills, Steam Heating and Ventilating, Pipe, Elbows, &c., reports a satisfactory business.

A Half Century With the Disstons.

David D. Bickley, who has charge of the long Saw department in the works of Henry Disston & Sons, Philadelphia, completed last month 50 years of employment in the service of the firm. Mr Bickley was the first apprentice taken in by Henry Disston after starting in business, which was in the early part of 1840, as manufacturer of Brick Trowels, Cleavers and Chopping Knives. We give below the substance of an interview with Mr. Bickley, which contains interesting reminiscences in regard to the business of the firm, which has grown from its insignificant commencement to its present enormous dimensions. In connection with the success of the firm it is pleasant to know the

esteem in which the members are held by their employees, who uniformly receive at their hands just and considerate treatment. While Mr. Bickley is, we believe, the only one of their men who has been in their employ for half a century, there are many others who have been with them for many years and have grown up with the concern:

In July, of 1840, said Mr. Bickley, I went with Mr. Disston as apprentice. The business was carried on in the back room of a building which was in the court running off Arch street, below Second. There were just the two of us, and in that little room all the work was done. As the business increased we left there and moved out of Arch street to Third, and from there to Bread street, opposite Letter lane. Here we first began to make Saws. In those days the grinding was not done by the maker, and I have often taken a wheelbarrow and loaded it with Saws and wheeled it out Second street to Kensington to the grinders. There was another grinder who lived out on the Darby road, and I frequently pushed my wheelbarrow out through the woods that stood where the business center of West Philadelphia is now.

At that time a good workman did well in the smithy if he turned out one dozen Saws in a day; now, with the improved methods and machinery, a man turns out 15 dozen a day, and does not work near as hard. I have worked hard all day at the anvil, from daybreak until evening, and only completed what a man to day will do in two hours. In 1846 we removed from Bread street and rented an old building which belonged to William Mills, at Front and Laurel. At that time there were no buildings where East Girard avenue is now. All that ground was commons. Where Canal street is a creek ran through to the foot of Brown street, where it emptied into the Delaware. This creek was the dividing line between Northern Liberties and Kensington and in those days was full of fish. After my day's work was done I would frequently walk to Second and Laurel, and it is no fish story when I say I generally brought back a fair string.

In 1847 the works were burned. Mr. Disston then erected his own factory, which was twice destroyed by fire and rebuilt. From Front and Laurel the business was moved to the present location at Tacony. In the old way we had to do the toothing on a machine run by tread power, each man furnishing his own. To-day we do the same work in one-fifth of the time and more satisfactorily. Everything was hand-made, and the art of tempering was not as well understood as now. For grinding the charge was as high as $10 a dozen. To-day it is done for one-twentieth of that sum.

Catalogues, Price-Lists, &c.

The Emerson Edge Tool Company, East Lebanon, N. Y., send us their price-list, for 1890 and 1891, of Scythes, Corn Knives and Axes. They call attention to the Emerson Standard Solid Steel Scythe, and describe it as being made from a solid bar of English cast steel, hardened with charcoal fire and tempered in oil. The point is made that the result is the lightest, stiffest and best cutting Scythe ever put upon the market. They allude to the fact that the season just closing was their first, and the reports from it are more than satisfactory.

The Puddefoot Sheet Metal Works, of which C. & A. A. Puddefoot are proprietors, Detroit, Mich., issue an illustrated catalogue and price-list of Pieced Tin and Japanned Ware. They advise the trade that they have succeeded to the manufacturing department of the Detroit Stamping Company. They state that their aim is to make good ware, and by so doing they hope to merit patronage.

W. A. Daggett & Co., Vineland, N. J., manufacturers of Daggett's Patent Russia Iron Roaster and Baker, issue a circular descriptive of the same. This Roaster and Baker is intended for roasting poultry, meats, fish, and for baking bread, cake, pudding, beans, &c. They also send, in connection with this circular, a book of testimonials from a large number of persons using the Roaster and Baker.

The Brown & Harker Mfg. Company, successors to Henderson, Harker & Hayden Mfg. Company, Columbus, Ohio, issue an 1890 catalogue and price-list of Coach and Carriage Lamps manufactured by them. Attention is directed to the fact that with enlarged facilities they are prepared to handle a large volume of business with care and promptness. On separate leaflets they show the King and Standard Oil Cans, Grocers' Oil Tanks, the Get-at-able Cut-off and the H. & H. Gas Soldering Furnace, all of which goods they manufacture.

P. J. Grinberg & Co., 155 South street, New York, manufacturers of Gas and Oil Stoves, Eagle Brand Stiff and Adjustable Sheet Metal Elbows, Patent Stove Pipes, House Leaders, Hot Air Pipes, Ash Sifters, &c., issue circular price-lists of these goods under date of July, 1890. Attention is directed to their No. 1 Bulged Elbows, which they now manufacture.

The Currey Mfg. Company, 211 and 213 South Clinton street, Chicago, Ill., issue a price-list of Paints, Colors in Oil, Mixed Paints, Colors in Japan, White Lead, Mineral Paints, Carriage Liquid Paints, Floor Paints, Varnishes, Brushes, Zinc and Putty. They allude to the fact that they manufacture only the best goods, and call especial attention to their Standard White Lead, Mixed Paints, Colors in Oil, Coach Colors, &c.

W. H. Chapman & Co., Middletown, Conn., issue an 1890 catalogue of Saddlery Hardware manufactured by them. This is a book of over 50 pages, complete in all its departments.

The Gutta Percha and Rubber Mfg. Company, New York, Chicago, Boston, San Francisco and Portland, Ore., issue a price-list of Belting, Packing, Tubing, Hose and Vulcanized Rubber Goods for mechanical purposes. Particular attention is directed to their Red Strip Rubber Belting, for Elevator Belts, which possesses peculiar merit.

We are in receipt of a folder issued by the Eagle Mfg. Company, Appleton, Wis., illustrating their specialties. These comprise the Eagle Self-Reversing Carrier, Miller's Reversible Carrier, Double Sheave Reversible Carrier, Malleable Iron Self-Reversing Carrier, Miller's Grapple Fork, Harpoon Forks, Wrought Yoke Pulleys, Shifter Hooks, Track Hooks, Feed Rollers, the Eagle Anti-Friction Door Hanger, the Boss Clothes Reel, &c. The Door Hanger is of wholly new construction, having been brought out within the past year. The Hanger, Track and Wheel Axles are made of steel, and the Track has no holes in it.

A. D. Hall & Son, Charlestown District, Boston, Mass., manufacturers of Hall's Standard Refrigerators, issue an 1890 illustrated price-list of these goods. Attention is directed to seven cardinal points which are features possessed by these Refrigerators. These are cold dry air, practical experience, easy of access, best materials, perfectly convenient, best skilled labor, non-conductor packed. These Refrigerators are built with slate, stone shelves and corrugated wrought iron ice racks, felt packed and zinc lined.

The Burnside Mfg. Company, Burnside, Ky., manufacturers of Cedar Faucets, Lumber, Posts, &c., for whom W. H. Jacobus, 90 Chambers street, is their New York agent, issue an illustrated price-list of their new Cedar Faucets. Attention is called to the shape of the hole in the side of the key which they make oblong, designed to afford a free flow and to render the keys absolutely interchangeable. This latter advantage is likely to be appreciated when Faucets are to be packed with other goods, as the keys can be taken out, thereby reducing space. They make the point that every Faucet is warranted.

The Gendron Iron Wheel Company, Toledo, Ohio, Eastern office and wareroom 107 Chambers street, New York, issue an illustrated price-list of Reed and Bamboo Furniture manufactured by them. They show Cribs, Chairs, Easels, Umbrella and Cabinet Stands and Tables. These are finished in different styles, also with or without upholstery. These goods may be stained in imitation of sixteenth century mahogany, cherry or antique oak. They call attention to the fact that their next season's Children's Carriage catalogue will introduce an entirely new style of gear, bodies and upholstering.

George J. Fritz, proprietor of the Central Iron Works, 2008 to 2028 South Third street, St. Louis, Mo., issues catalogues descriptive of his latest machines. These pertain to laundry outfitting. The patent Shirt Body Ironer, also an improved Wrist Band, Sleeve and Yoke Ironer are shown. Testimonials printed indicate that these machines are successful in their operation.

Forehand & Wadsworth, Worcester, Mass., issue an illustrated catalogue and price-list of the Fire Arms manufactured by them. These are shown in Breech Loading Shot Guns, single and double barreled; Hammerless, Single Barrel, Breech Loading Shot Guns. The Revolvers are the New Model, New Hammerless and American British Bull Dog. These goods are so favorably known to the trade that further comment is needless.

The Holmes & Edward Silver Company, Bridgeport, Conn., manufacturers of Sterling Silver Inlaid Spoons and Forks, Gold and Silver Plated Table Flat Ware, &c., send their illustrated catalogue and price-list. They also issue leaflets, illustrating goods added to their list since the issue of their catalogue. These new goods are Spoons and Forks with raised initials, Mexican Silver Spoons and Forks, Sterling Silver Inlaid Spoons and Forks, Hotel Table Flat Ware, Greek and Mayflower patterns in Plated Spoons and Forks. They also advise us that they have several other patterns not illustrated by circulars.

The Heim Belting Company, 29 Ferry street, New York, manufacturers of Pure Oak Tanned Leather Belting and Lace Leather, issue a price-list of these goods. Attention is directed to the fact that the Heim Belt has been on the market for the past 20 years, and has given entire satisfaction to all who are using it. Large Belts made by this company are referred to, among which are Belts 72 inch three-ply, transmitting 1000 horse-power.

Chapman & Meehan, sole agents, 140 Franklin street, New York, issue circulars of the New York Pail, manufactured by the New York Wood Fiber Company. The Pail is described as being very attractive in style, a bright mahogany finish, coppered bails and brass ears. It is alluded to as being light and strong and not liable to chip, as the rim is protected

by a metal hoop. The desirable qualities referred to as being possessed by these goods are: No broken hoops, no shrinking, no leaky bottoms, no absorption, no odor and no paint.

The John C. Jewett Mfg. Company, Buffalo, N. Y., issue an 1890 illustrated catalogue and price-list of Refrigerators, Water Coolers, Water Filters, Bird Cages, Brass and Nickel Plated Goods, Toiletware, &c. They also issue under date July, 1890, an appendix showing Coal Vases and Hods and special Holiday Goods, Brass, Wrought Iron, Antique Silver and Nickel Plated. The designs are characterized by an unusual degree of artistic excellence. They desire to give notice to the public that all the names used in their catalogue and appendix to designate their different articles of manuture are legal trade-marks and are used by them as such.

R. E. Kidder, 23 Herman street, Worcester, Mass., issues circulars descriptive of Drawing Tables and Easels, Lightning Copying Presses and Kidder's Patent Universal Sawing Machine as manufactured by him. These articles are each referred to as possessing merits peculiar to themselves, and as worthy of particular notice by those interested in these goods.

. Curtis & Co., Cohoes, N. Y., manufacturers of Wrought Iron Pipe and dealers in all kinds of Fittings for Steam, Gas, Water and Oil, Brass and Iron Valves and Cocks, Plumbers' Supplies, Cast Pipe, Radiators, &c., issue a price-list of these goods. They send illustrated catalogue upon request. In a notice to the trade the claim is made that they keep the largest stock and best assortment of Fittings for steam, water, gas and oil in the State.

The Detroit Lubricator Company, Detroit, Mich., issue their annual catalogue, illustrating and explaining their Lubricators for locomotives, stationary, marine, portable and traction engines, steam pumps, &c. Especial attention is directed to the new method of connecting the discharge end of the tallow pipes to locomotives and the great benefit arising therefrom. The method of oiling by means of these Lubricators is explained as consisting in introducing the oil drop by drop into the steam pipe, where it atomizes and mingles with the steam, and is carried to every part of the valves and cylinders, lubricating all parts reached by the steam.

E. Jenckes Mfg. Company, Pawtucket, R. I., manufacturers of Bright Wire Goods, Spring Pins and Keys, Belt Hooks, &c., issue a revised price-list. Especial attention is called to their Crescent Coat and Hat Hook, which, owing to its peculiar construction, is referred to as the strongest of any of the Wire Hooks now on the market.

The Chicago Hardware Mfg. Company, Chicago, Ill., issue price-list No. 8 of 40 pages, affecting catalogue of December, 1888.

Romer & Co., 275 to 279 Passaic street, Newark, N. J., manufacturers of Locks, Night Latches and Carriage Lamps, call attention to the fact that they are now making Builders' Hardware in addition to Padlocks. They issue an 1890 catalogue illustrating a line of these goods, which consist of Rim and Mortise Locks, Escutcheons, Knobs, Butts, Sash Lifts, &c.

J. B. Field & Co., 77 Woodward avenue, Detroit, Mich., manufacturers of Split Bamboo Fishing Rods, advise us that during the coming winter they design publishing a comprehensive catalogue, including the Artistic Hardware and Typewriters which they now handle. The goods handled by them are referred to as Artistic Hardware, Cutlery and Hardware Novelties, Smith's Premier Typewriters, Abbott's Automatic Check Perforators, Base Ball and Athletic Goods, Winchester Repeating Arms Company Goods, Gassner Dry Batteries, Fishing Tackle and Guns.

The Hagerstown Steam Engine and Machine Company, Hagerstown, Md., issue a catalogue illustrating their goods, also a price-list. They manufacture Empire Engines, Threshers, Clover Hullers, Saw Mills, Grain Drills, &c. They refer to the fact that, recognizing the merits and advantages of good machinery, they have persistently adhered to the policy of making none but the best.

Jenkins Bros., 71 John street, New York, manufacturers of Jenkins' Valves and Jenkins' Standard Packing, allude to the fact that a few months since they issued a reduced list, believing it for the best interests of the trade. The trade, however, demanded higher lists, and consequently to please their customers they have returned to their old list, which is universally adopted by all firms in the trade. They issue a revised edition of their 1890 catalogue conforming to the list they have now adopted.

Jones & Laughlins, Pittsburgh, Pa., and Chicago, Ill., issue catalogue E (superseding all previous price-lists), being a price-list of Cold Rolled Steel and Iron Shafting, Couplings, Pulleys, Hangers, Mule Pulley Stands, Binder Frames, Guide Pulleys, Jib Cranes, &c. They also send a large sheet, No. 12, of Iron Beams, Channels and Steel Beams as rolled by the American Iron and Steel Works, of which Jones & Laughlins are proprietors.

Exports.

PER SHIP THYATIRA, JULY 12, 1890, FOR SYDNEY, N. S. W.

By Manning, Bowman & Co.—1220 pounds Graniteware.
By J. L. Mott Iron Works.—5157 pounds Cast Iron Stoves.
By Russell & Erwin Mfg. Company.—8 cases Hardware.
By Simpson, Hall, Miller & Co.—5 packages Britannia Ware.
By A. Field & Sons.—12,167 pounds Iron Shoe Nails.
By St. Louis Stamping Company.—229 pounds Granite Ironware.
By A. Field & Sons.—5890 pounds Iron Shoe Nails.
By Rand Drill Company.—2 boxes Drill Machinery.
By Goulds Mfg. Company.—42 Pumps, 5008 pounds Pumps.
By V. Basanta.—21,000 Hardware.
By R. H. Dana & Co.—23 dozen Forks, 10 dozen Scoops.
By Coombs, Crosby & Eddy.—6 Iron Pipe Pumps, 2 dozen Lanterns, 1 dozen Blocks.
By Healy & Earle.—8 cases Wood Working Machinery, 2 crates Mangles, 8 packages Pumps, 4 boxes Planers, 9 packages Planing Machines, 2 packages Pulley Blocks, 1 box Emery Machinery, 1 box Hardware, 1 case Wood Working Machinery.
By R. W. Forbes & Son.—1 dozen Forks, 27 packages Stoves, 4 packages Agricultural Implements, 8 dozen Axle Clips.
By A. Field & Co.—8 dozen Axes, 15 dozen Hardware, 2 dozen Tools, 12 dozen Saws, 6 dozen Hammers, 8 dozen Hardware, 320 dozen Tools, 100 dozen Whips.
By Welsh & Lea.—1 case Hardware, 22 dozen Axes, 4 cases Hardware, 1 case Meat Choppers, 6 dozen Traps, 700 gross Tacks, 3 Scales, 4 dozen Hardware, 6 dozen Wrenches, 2 dozen Forks, ¾ dozen Corn Mills, 3 cases Hardware, 115 sets Axles.
By Strong & Trowbridge.—5 gross Fruit Jars, 65 sets Axles, 15 Store Trucks, 18,250 Bolts, 70 pounds Rivets, 225 pounds Castings.
By A. S. Lascelles & Co.—6 gross Pencils, 12 dozen Broilers, 48 dozen Axes, 4 cases Hatchets, 5 dozen Clippers, 16 dozen Hammers, 1 case Hardware, 23 dozen Hardware, 9 gross Axle Grease, 2 gross Agateware, 12 gross Fly Traps, 5 dozen Hardware, 9 dozen Sledges, 4 dozen Braces, 5 gross Axle Grease, 18 dozen Rakes, 6 dozen Oil Cans, 2 packages Blocks.
By Ilsley, Doubleday & Co.—1 gross Axle Grease, 8 dozen Brushes, 1 dozen Wagon Jacks, 3 gross Metal Polish, 11,200 pounds Axle Grease, 1 gross Potato Mashers, ½ gross Soap Holders, 6¼ gross Axle Grease, 243 pounds Glue, 7½ gross Axle Grease, 3 gross Metal Polish, 12 dozen Brushes, 5 gross Tools, 5 gross Egg Beaters.
By McLean Bros. & Rigg.—5 dozen Sad Irons, 9 dozen Locks, 4 cases and 2 casks Graniteware, 1 dozen Scissors, 10 Rifles, 6 Plumbs and Levels, 15 Miter Boxes, &c., 4 packages Plated Ware, 600 pounds Tacks, 6 dozen Bush Hooks, 36 dozen Broilers, 36 dozen Butt Hinges, ½ dozen Guns, 7 dozen Braces, 4 packages Hardware, 2 dozen Saws, 1 gross Lemon Squeezers, 7 dozen Razors, 30 dozen Axes, 14 dozen Wrenches, 4 dozen Saws, 52 dozen Fruit Jars.
By F. B. Wheeler Co.—6 dozen Axes, 3 gross Brushes, 10 dozen Rakes, 1 box Tinware, 1 case Hardware, 1 box Tinware, 9 dozen Fly Traps, 1 case Hardware, 2 1-6 dozen Oil Stoves, &c., 4 dozen Squeezers, 2 dozen Shaves, 14 dozen Broilers, 10 dozen Hammers, 3 cases Tinware, 3 cases Wagons.
By R. W. Cameron & Co.—4 boxes Machinery, 25 gross Fruit Jars, 1800 pounds Rubber Hose, 720 pounds Agricultural Implements, 3 cases Household Hardware, 11,650 Bolts, 834 pounds Carriage Hardware, 1 case Tools, 12 boxes Carriage Hardware, 3 Jacks, 595 pounds Carriage Hardware, 20 dozen Whip Sockets, 2730 pounds Carriage Hardware, 9 packages Lampware, 10 dozen Axes, 20 Fare Registers, 100 tons Iron, 3 boxes Wood Working Machinery, 225,884 pounds Iron, 2 boxes Belting, 12 cases Pumping Machinery, 1 case Lubricators.
By H. W. Peabody & Co.—3 cases Shoe Tools 70 cases Hardware, 80 cases Cartridges, 1 barrel Hardware, 2 dozen Revolvers, 96 dozen Axes, 12 Cultivators, 1 bundle Cultivators, 1 case Rifles, 5 cases Die Stocks, 25 Axes, 26,320 pounds Barb Wire, 1 box Castings, 800 pounds Glue, 1 case Machinery, 78 dozen Churns, 1 case Brushes, 1 case Tools, 3 gross Whips, 2800 pounds Nails, 24 cases Nails, 1 case Rivets, 16 dozen Shoe Tools, 2 packages Tools, 20 rolls Sandpaper, 1 case Shoe Tools, 6 dozen Sifters, 6 Saws, 12 Washers, 20,000 Nails, 24 boxes Oil Stoves, 395 packages Agricultural Machinery, 26 cases and 1 crate Machinery.
By W. H. Crossman & Bro.—2 sets Axles, 12 dozen Wrenches, 1 Corn Sheller, 2 dozen Adzes, 4 dozen Mattocks, 7⅛ dozen Hog Rings, 33 cases Hardware, 1 case Tire Shrinkers, 4 dozen Hatchets, 6 dozen Lamps 6 dozen door Springs, 1 gross Oilers, 2 cases Agricultural Implements, 4 Stoves, 1755 pounds Iron Bolts, 6 Wringers, 17 Emery Wheels, 2 dozen Bush Hooks, 16 cases Hardware, 9 dozen Reflectors, 1 dozen Wringers, 15 dozen Blocks, 32 dozen Brushes, 12 dozen Egg Beaters, 84 dozen Fruit jars, 3 cases Hardware, 1 dozen Steelyards, 7 cases Hardware, 20 dozen Axes, 20 dozen Hatchets, 6 dozen Razor Strops, 105 dozen Fish Lines, ⅓ dozen Wringers, 6 dozen Braces, 142 pounds Tacks, 1½ dozen Churns, 14,000 Loaded Shells, 8 dozen Pick Axes, 20 dozen Hatchets, 1 gross Transom Lifts, 18 dozen Hatchets, 10 gross Hooks, 6 packages Hardware, 60 dozen Axes, 2 dozen Mowers, 6 dozen Transom Lifts, 9 Revolvers, 1 dozen Corn Shellers, 30 dozen Broilers, 1 dozen Whip Sockets, 369 pounds Iron Bolts, 2 cases Hammers, 3 cases Tills, 27 Stoves, 20 dozen Axes, 8 dozen Picks, 12 pairs Springs, ⅓ dozen Bolt Clippers, 6 dozen Picks, 6 dozen Mattocks, 15 Miter Boxes, 980 pounds Staples, 30 feet Rubber Hose, 6 dozen Wrenches, 22,428 pounds Barb Wire, 14 cases Hardware.

PER BARK MARY S. ANDS, JULY 22, 1890, FOR WELLINGTON, NEW ZEALAND.

By W. H. Crossman & Bro.—2 dozen Parers, 30 dozen Axles, 2 gross Traps, 4½ dozen Wringers, 2 Miter Boxes, 58 Churns, 3 cases Hardware.
By Collins & Co.—10 dozen Picks.
By W. & B. Douglas.—30 Pumps.
By H. Dustan & Son.—1 case Hardware.
By R. W. Forbes & Son.—9 packages Hardware, 13 packages Stoves, 12 dozen Sledge Handles, 1 case Machinery, 32 boxes Horse Nails, 20 Pumps, 20 packages Carriage Hardware, 7840 pounds Nails, 1⅓ dozen Wringers, 1 dozen Store Trucks, 5¼ dozen Churns, 39 packages Hardware, 40 dozen Hardware, 40 dozen Axes, 10 dozen Hatchets, 15½ dozen Forks, 1 case Carriage Hardware, 20 packages Carriage Hardware, 1 cask Plateware, 25 gross Lead Pencils, 2 dozen Pumps, 25 dozen Axes, 3 gross Axle Grease, ⅓ dozen Wagon Jacks, 3 dozen Wringers, 2 cases Machinery, 60 Axes, 19 packages Stoves, 500 pounds Nails, 10 dozen Shovels and Spades, 55 dozen Axes.

FOR AUCKLAND.

By R. W. Forbes & Son.—150 dozen Axe Handles, 2464 pounds Nails, 2 packages Hard-

ware, 1 case 2 boxes Hardware, 7 packages Refrigerators, 3½ dozen Churns, 13 packages Wringers and Agricultural Implements, 12 gross Pencils, 2 cases Hardware, 2 cases Platedware, 41 packages Hardware.

By Welsh & Lea.—1 crate Plows.
By H. W. Peabody & Co.—11 crates Churns, 56 packages Hardware, 6 dozen Lamps, 2 cases Plows, 1 dozen Hay Knives.

PER BARK D. A. BRAYTON, JULY 24, 1890, FOR PORT ELIZABETH, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—500 Plows, 625 Landslides, 1250 Plow Shares, 50 dozen Hatchets, 20,000 pounds Barbed Wire, 4 dozen Scales, 4 crates Churns, 64 dozen Choppers, 1 Sheller, 100 dozen Hammers, 2½ gross Carpenters' Tools, 6 dozen Twine Boxes.
By W. H. Crossman & Bro.—16 packages Agricultural Implements, 5744 pounds Sisal Rope, 4846 pounds Jute Rope, 6 cases Agricultural Implements, 2¾ dozen Builders' Hardware, 5 cases Agricultural Implements, 2 dozen Corn Mills, 21 cases Agricultural Implements, 11 dozen Meat Cutters, 5 cases Agricultural Implement Points, 6 dozen Stove Polish, 4 Corn Shellers, 1 case Carpenters' Hardware, 1 case Plow Points, 858 pounds Sisal Rope, 771 pounds Jute Rope.
By Winchester Repeating Arms Company.—47,000 Cartridges.
By R. W. Forbes & Son.—10 dozen Axles, 3 boxes Saws, 6 dozen Axes, Shovels and Rakes, 9 packages Hardware.
By Corner Bros.—7 cases Pumps, 10 dozen Hardware.
By H. W. Clark.—9 packages Wheelbarrows.
By John Norton & Son.—10 dozen Picks, 2 Rifles, 12 Corn Shellers.
By Coombs, Crosby & Eddy.—10,000 pounds Barb Wire, 10 dozen Hatchets, 16 dozen Scales, 2 Corn Shellers, 8 Plows, 15 dozen Builders' Hardware, 2 dozen Scoops, 15 cases Plows, 2 Store Trucks, 1 Hand Cart, 5000 pounds Barbed Wire, 25 dozen Hatchets, 2992 pounds Jute Rope, 65 pounds Jute Rope, 1168 pounds Sisal Rope, 19 dozen Platedware, 3½ gross Carpenters' Tools, 4 dozen Axes, 3½ dozen Braces, 8 dozen Picks, 8 Saws, 5 Ladders, 31 gross Builders' Hardware, 1 dozen Adzes, 25 dozen Saws, 8 reams Sandpaper, 1 dozen Scoops, 2 Ladders, 400 pounds Nails, 3 Scales, 8 Plows, 2¼ dozen Churns, 2 dozen Shellers, 67 cases Agricultural Implements, 38 dozen Hardware, 6 cases Hardware, 4 dozen Wheelbarrows, 1 dozen Carts.

PER SHIP RAPHAEL, JULY 24, 1890, FOR MELBOURNE, AUSTRALIA.

By Henry Disston & Sons.—555 pounds Hardware.
By Delacamp & Co.—4 Lawn Mowers, 2 packages Fly Traps, 4 casks Fruit Jars, 1 box Lawn Mowers.
By W. K. Freeman.—825 pounds Lawn Mowers, 575 pounds Hardware.
By Russell & Erwin Mfg. Company.—33 packages Hardware.
By Dunbar, Hobart & Co.—2 cases Nails, 48 cases Nails.
By H. W. Peabody & Co.—6 packages and 24 cases Agricultural Implements.
By R. W. Cameron & Co.—4160 pounds Bolts, 8700 pounds Machinery.
By Russell & Erwin Mfg. Company.—3 cases Hardware.
By Meriden Britannia Company.—3 boxes and 3 packages Platedware.
By Strong & Trowbridge.—1½ dozen Molasses Gates, 60 pounds Stone, 10 dozen Hatchets, 1900 Bolts, 5 dozen Scythes, 12 Brass Gates, 24 dozen Locks.
By Arkell & Douglas.—135 cases Harvesters and 17 bundles Poles.
By Russell & Erwin Mfg. Company.—7 cases Hardware.
By Henry Disston & Sons.—1070 pounds Hardware.
By Bissell Carpet Sweeper Company.—39 cases Carpet Sweepers.
By Welsh & Lea.—6 dozen Saw Sets, 3 dozen Miter Boxes, 9 dozen Axes, 10 Refrigerators, 6 dozen Mouse Traps, 2 gross Tacks, 60 Refrigerators, 18 dozen Meat Choppers, 7 dozen Braces, 114 Stones, 20 dozen Hammers, 18 cases Hardware, 12 dozen Hammers.
By R. H. Dana & Co.—1000 pounds Glue, 12 dozen Forks, 6 cases Bolts, 23 kegs Nails, 11 dozen Axes, 2 dozen Braces, 34¾ dozen Hardware, 12 dozen Snaths, 1 dozen Wringers, ½ dozen Miter Boxes, 6 cases Nails, 3 cases Hardware, 2 dozen Saw Sets, 3 cases Hardware, 12 dozen Axle Grease, 3 dozen Hardware, 6 dozen Axes, 178 dozen Hardware, ½ dozen Lawn Sprinklers, 2 cases Oil Stone, 10 dozen Lawn Mowers, 3 dozen Clamps, 1 case Rivets, 24 dozen Latches, 8 cases Hardware.
By H. W. Peabody & Co.—1 case Bellows, &c., 2 cases Hardware, 149 cases Hardware, 34 packages Hardware, 3 packages Pumps, 2 cases Bolts, 3 cases Hardware, 4 packages Hardware, 1 case Hardware, 4 cases Axles, 11 cases Iron Castings, 38 cases Skewers.
By R. H. Dana & Co.—4 dozen Screws, 5 cases Bolts, 6 kegs Nails, 6 cases Nails, 17 dozen Axes, 34 dozen Picture Cord, 6 dozen Axle Grease, 6 dozen Fly Traps, 2 dozen Saw Sets, 39 dozen Rat Traps, 6 dozen Hardware, 2 dozen Axes, 1 case Glue, 6 dozen Egg Beaters, 1 case Oil Stones, 1 case Coffee Mills, 6 cases Hardware.
By McLean Bros. & Rigg.—4 dozen Axes, 23 dozen Hammers, 2 dozen Toy Banks, 4 dozen Hatchets, 45 dozen Saws, 40 dozen Drills, 206 pounds Oil Stone, 23 dozen Chisels, &c., 24 dozen Hammers, 3 dozen Rakes, 3 dozen Wrenches, 18 dozen Pulleys, 17 cases Hardware, 6 dozen Cork Pullers, 45 dozen Scoops, 1 dozen Clippers, 23 dozen Saws, 7 boxes Wire Goods, 24 Stocks and Dies, 20 dozen Drills, 67 Plows.
By The F. B. Wheeler Company.—1 case Carriage Hardware, 1 case Brushes.
By Meriden Britannia Company.—3 boxes Platedware.
By A. Field & Co.—63 dozen Axle Grease, 50 Axles.
By Mailler & Querean.—9 cases Axles, 1 case Springs.
By R. W. Forbes & Son.—13 cases Carriage Hardware, 6 dozen Axles, 1 case Hardware, 1 box Carriage Hardware, 5 cases Fishing Rods, 2 boxes Platedware, 60 dozen Fly Traps, 8 packages Carriage Hardware, 1 case Fire Arms, 2 packages Lawn Mowers, 1 package Hardware, 28 packages Platedware, 25 packages Hardware, 11 cases Fruit Jars.
By W. H. Crossman & Bro.—16 Stoves, 3 dozen Wringers, 10 dozen Traps, 2 cases Platedware, 1 dozen Sad Irons, 9 Lawn Mowers, 10 Ranges, 11 cases Agricultural Implements, 5 gross Traps, 4 cases Hardware, 2 Hay Rakes, 12 dozen Traps, 14 cases Agricultural Implements, 62 Pumps, 21 Pipe Wrenches, 4½ dozen Hoes, 1549 pounds Iron Bolts, 1 case Agricultural Implements, 4 dozen Mattocks, 9 cases Agricultural Implements, 15 dozen Cages, 58 Revolvers, 3 Meat Choppers, 6 dozen Traps, 12 dozen Axle Grease, 12 gross Polish, 8 cases Hardware, 1 dozen Carpet Sweepers, 3 dozen Refrigerators, 45 dozen Thermometers, 3500 feet Hose, 8 gross Curry Combs.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

The market for goods in this line has been quiet and without new or particularly interesting feature. The position of the chief base materials that enter into the manufacture of both staple articles and specialties is practically the same as it was 60 days ago, and leaves no incentive for departure from ordinary conservative course in the matter of buying. The distribution of goods in proper form for consumption is of strictly routine character also. These conditions, and the fact that competition among sellers is no sharper than before gives affairs a quiet appearance; manufacturers and jobbers state that the distribution is in line with usual experience at this season, and that there is really nothing to complain of except the drawbacks to properly filling out of town orders consequent upon the railroad strikes.

White Lead.—The movement of this pigment has been rather slow, and little opportunity afforded to test the situation. It is asserted, however, that the "Pioneer" brand is not coming forward on contracts as freely as could be desired, and that the offerings of the brand for future delivery are unimportant. This being the case the corroders identified with the National Lead Trust have the market for pure Lead practically to themselves. However, the absence of any regularity in prices among jobbers is still an unfavorable feature, and cheap Leads continue to be pushed forward with vigor and in a manner that restricts the outlet for the pure article. Current prices all around are practically the same as those quoted the past two or three weeks.

Zincs.—Domestic Oxide is steady at the old range of prices. Large consumers are taking about the usual quantities used at this season of the year, but the distribution of small parcels is barely up to the average. Foreign brands are unchanged as to prices and selling slowly.

Colors.—All varieties of house painters' Colors have been rather slow, the jobbing movement making a slim exhibit and the trade demand running light. Prices are, however, holding quite steady. Grinders' Colors move at practically former prices, but rather slowly. In ready mixed Paints there is a moderate trade.

Miscellaneous.—Chalk prices are still rather weak and the demand for the article continues moderate. Whiting sells at unchanged prices, but rather slowly. Paris White is quiet, but steady. Clays are without important change.

Oils and Turpentine.

The general situation is almost identical with that of a week ago. The rise in Lard and inferior Greases that followed the excitement in the corn market appears to have had little effect upon lubricants; nothing suggestive of cheaper raw material for Linseed Oil comes to light; the supply of new crude Menhaden continues liberal, and in other lines the situation appears to be normal. Hence a fairly steady tone to values in nearly all departments and no indication of immediate radical movement in any direction. Dealings throughout have been of routine character.

Linseed Oil.—City brands of raw Oil are still very firmly held at 64¢ for Calcutta and 62¢ for domestic seed products, and out of town brands rarely go at less than 60¢. The demand is running rather light, however, and the firmness of the market is due chiefly to the high cost of raw material. Both foreign and domestic seed have been sold at advanced prices during the past week.

Cotton Seed Oils.—The crude article has had a very limited sale, and 30¢ is now considered full value for prime quality. Low grade refined is still taken in fair quantities by exporters, and the home trade demand for that article is rather better; fair qualities at 31½¢ @ 32½¢ is most in favor. Prime quality is quoted at 35¢ onward.

Menhaden Oil.—Several good sized lots of ordinary quality crude have been sold at 20½¢, showing a fairly steady market. The fishing is fair and the supply of Oil good. No change has been made in quotations for the manufactured goods but close buyers could doubtless obtain concessions.

Miscellaneous.—Cocoanut Oils are very firmly held, but slow of sale; and Olive Palm Oils are steady, but in limited demand.

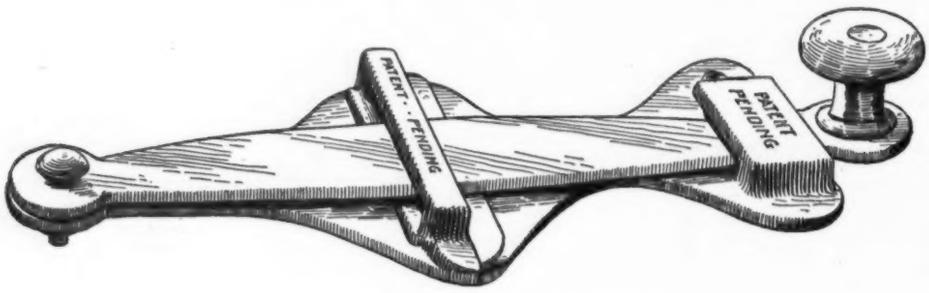
Sperm and Whale Oils.—The crude article is without change as to prices and in limited demand. The manufactured products are also unchanged and moving rather slowly.

Spirits Turpentine.—The home trade demand has been slow here, and there is no sign of export interest. The Southern markets remain firm, however, and that fact serves to hold prices here in the face of light movement. Current quotations are 41¢ @ 41½¢ for wholsale lots.

Among new corporations in Illinois are the following: Rice Machinery Company, at Chicago, to manufacture machinery; capital stock, $20,000; incorporators, A. E. Rice, C. G. Rice and George Seaver. Chicago Fire Hose Mfg. Company, at Chicago; to manufacture improved cotton lined fire hose; capital stock, $50,000; incorporators, Robert Many, Richard H. Salter and L. B. Ong.

The Perfection Door Lock.

The Cleveland Specialty Company, Cleveland, Ohio, are introducing the Perfection Door Lock, as illustrated herewith,



The Perfection Door Lock.

for fastening doors on delivery wagons. The plates are alluded to as being made of the best malleable iron and the springs of the best steel, all parts milled and fitted together in a thorough and workmanlike manner. The lock has holes drilled in the plates for bolts to secure them to the woodwork, working as well on single doors as on double, no other fastening being required.

Miller's Folding Lamp Post.

The Miller Advertising Company, Hartford, Conn., P. O. Box 807, are introducing Miller's Folding Lamp Post as illustrated herewith, showing the lamp lowered to be filled, and again raised as in use. When erect the light is 11 feet from the ground, Fig. 2, the entire hight being 13 feet. It is for use in illuminating streets, private grounds, driveways, &c.

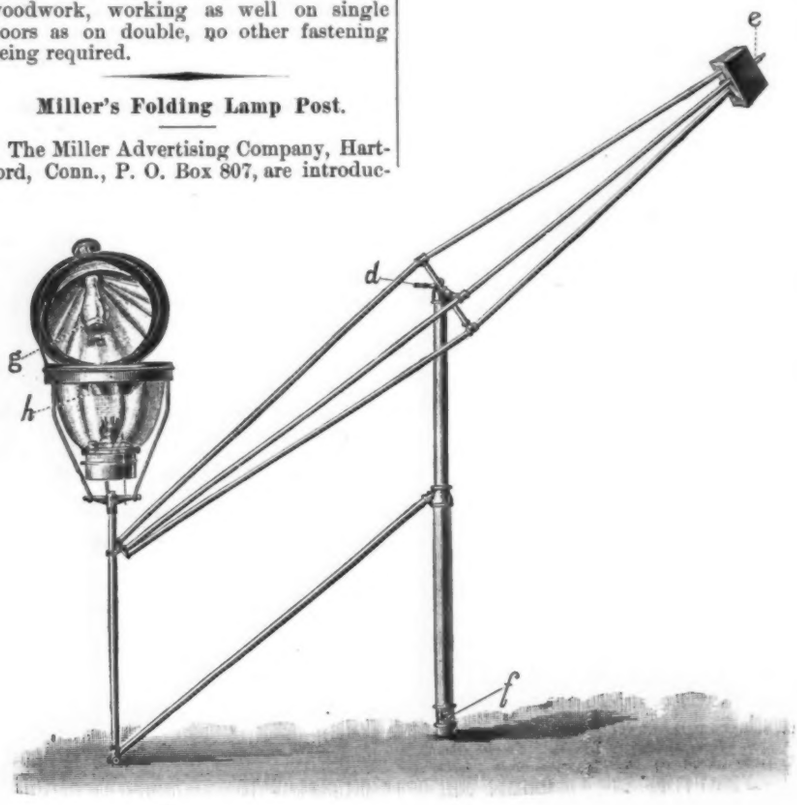


Fig. 1.—Lantern Lowered to Clean, Fill, Light, &c.

It has the advantage of being easily got at for cleaning and lighting, Fig. 1. The burner is alluded to as one of the many popular forms of the central draft type. The reflector provided causes the light to be thrown on the ground and the hight of the post distributes the light over long distances. The advantage of the lamp throwing no shadow is referred to as a very desirable point; and it is estimated that adding to the power of the burner, which is 40 to 75 candle power, the reflector which gathers the rays of light, the result would be 75 to 100 candle power.

Rubolio Sharpening Strops.

Harmon & Dixon, 118 Chambers street, New York, are introducing Rubolio Sharpening Strops, as illustrated herewith, of which three styles are made; one for pen-knives, small tools, &c., another for kitchen and general use, and the third size of special texture for razor hones. Rubolio is described as a composition of rubber, steel dust and emery, blended and vulcanized in such a manner that the emery and steel dust are evenly distributed through the rubber. Strips of this material are cemented on wood backs, and is referred to as possessing many advantages over any article for polishing and sharpening. The point is made that these strops need no oil or water, do not become glazed, and will put a fine polish on knife blades, scissors, &c., as well as sharpen them.

Rubolio Sharpening Strops.

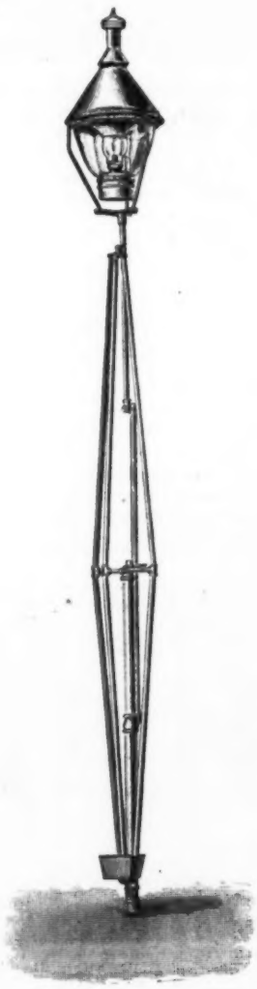


Fig. 2.—Post Erect and Lantern Complete.

C. M. Smith, formerly superintendent of the cutlery works at Shelburne Falls, has resigned and gone to Chicago to assume the superintendency of the American Cutlery Works there. His position is to he filled by Superintendent Halligan.

The Bostwick Metal Lath.

A new metal lath is just ready for the market, and is offered by the Bostwick Metal Lath Company, No. 38 Park Row, New York. This lath and its applications are very thoroughly illustrated in the accompanying engravings. It may be described as a sheet of metal corrugated longitudinally, and having between the corrugations certain slits cut in the metal,

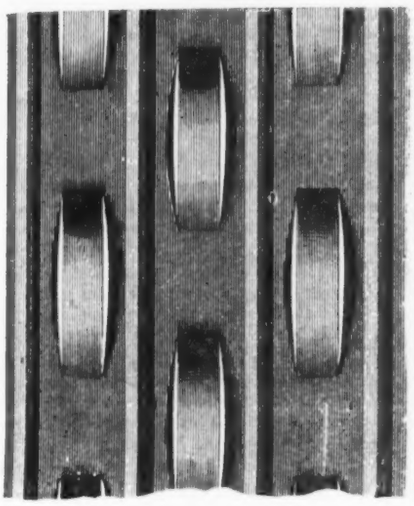


Fig. 1.—General View of the Bostwick Metal Lath, with the Loop Projecting to the Front.

the metal between the slits being stretched or expanded, forming loops projecting on one side of the sheet. The plaster, when applied, passes under the loop and through the opening, thus forming a double key to the mortar.

The general utility of metal laths is recognized at the present time. The superiority of this material over wooden laths need scarcely to be recounted. To certain points, however, we will direct attention. First and foremost is the fact that the lath itself is fire proof, and that its employment, even with wooden studding and ceiling beams, renders the house or building in which it is employed measurably fire proof, thereby realizing a large saving in insurance. The

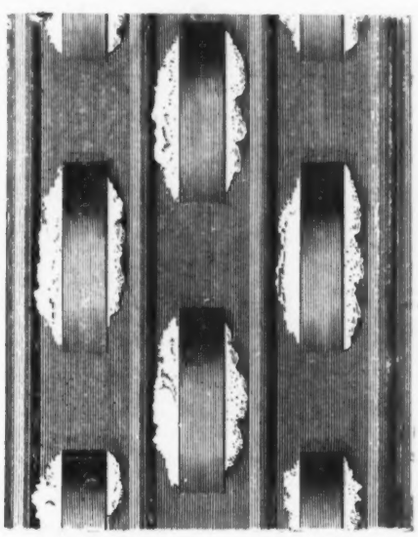


Fig. 2.—Bostwick Metal Lath Used with Adamant or Granite Plaster, which is Applied on the Reverse Side, Effecting a Saving of Material.

ease with which this material may be put in place is likewise referred to among the advantages set forth by the company. They also assert that it has already been demonstrated that a workman can put on about three times more of this metal lath in one day than he can of the ordinary wooden lath. Again, the mason can plaster a much larger number of square feet of this metal lath than he can of wooden lath in the same period of time. Metal lath will make a stronger wall than wooden lath and one which is less liable to crack in the usual process of settling. The keying secured by the metal loops is superior to the keying obtained by the use of wooden lath, which causes the plaster to be less liable to fall off when jarred by any cause. Again, a smaller amount of plaster will cover the same space, resulting in a still further saving for the metal lath. This saving of plaster follows, because in the first instance the surface to be covered is even and unyielding, and second, the openings being uniform and sufficient to guarantee a strong key, will not admit of waste mortar falling off from the back of the lath. As summing up these advantages and others, the company set forth that a wall finished with this metal lath will cost but little more than if wood lath is used.

Referring to the engravings, Fig. 1 shows a general view of the lath, with the expanded loops and corrugations,

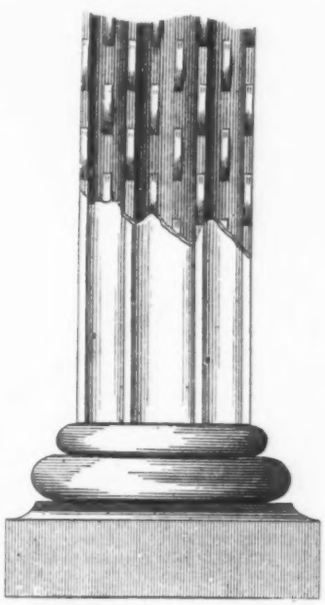
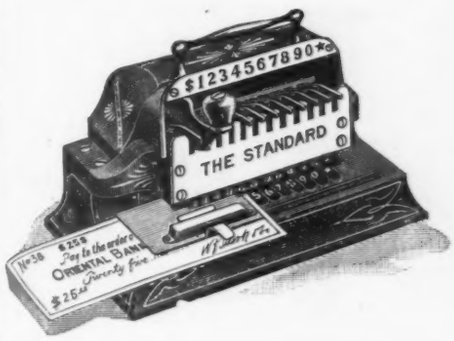


Fig. 3.—An Illustration of the Use of the Bostwick Metal Lath in Architectural Embellishments.

while Fig. 2 shows the lath when adamant or granite plaster is used. These materials are applied on the reverse side, making a strong key and resulting in a saving of plaster. Fig. 3 indicates how the lath may be used as a foundation for architectural embellishment, as, for example, in a fluted column. The new catalogue, which the company have just ready for distribution, contains a number of illustrations, additional to those presented herewith, indicating the great utility of the article.

The Standard Automatic Safety Punch.

The Hoggson & Pettis Mfg. Company, 64 to 68 Court street, New Haven, Conn., for whom W. F. Stark & Co., 303 Broadway, New York, are general selling agents, are introducing the Standard Automatic Safety Punch, as illustrated herewith. The use of the punch is for cutting out the entire figures representing the amount written in the body of a check or other commercial paper. The adoption of this system by banks and business houses proves the principle a sound one, as any amount once cut out it becomes a physical impossibility to form a non-perceptible union. The machine is described as having but one lever or key, the work being accomplished with one hand. The point is made that it is the only machine that

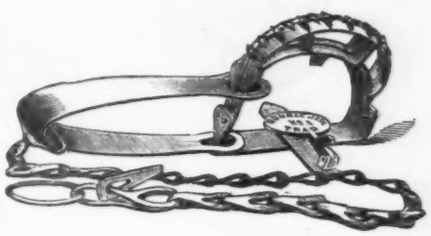


The Standard Automatic Safety Punch.

has an arbitrary feed device, which makes it impossible to cut one figure into another, entirely overcoming the objection heretofore—spoiling of checks.

Double Jaw Trap.

The Cortland Trap Company, Cortland, N. Y., are introducing the double jaw trap, as illustrated herewith. It is stated that one-third of the game caught in an ordinary single jaw trap effects escape by gnawing off the feet below the jaws and working the stump through, the foot having become numb from the pressure of the jaws. The intention of the double jaws is to prevent this, and the manner of setting without a latch, but by direct con-



Double Jaw Trap.

tact with the jaws, is alluded to as providing against another great defect in ordinary traps, that of game being thrown out at the moment the trap is sprung.

Tatum's Catalogue File.

Samuel C. Tatum & Co., corner John and Water streets, Cincinnati, Ohio, manufacture a catalogue file as shown in Fig. 1. This is finished in antique oak, the front being carved, making a handsome and attractive piece of office furniture. It is 19 inches high, 30½ inches long and 14 inches wide. Larger sizes are also made, being the same dimensions except twice or three times as high, consequently having twice or three times the capacity. The iron partitions, of which there may be as many as the letters in the alphabet, slide over a rod at the nearest lower corner, and opposite (toward the back) engage at intervals in a perforated strip let into the upper face of the bottom board, upon which board the catalogues rest, as shown in Fig. 2. It is easy to adjust the distance between the partitions for any size of books or papers without removing or disturbing the material already filed. The index letters on the partition are intended for ready distribution of the material according to

the names of the manufacturers or dealers. The case is spoken of as tight, which keeps out the dust. For index of subjects the card index is used, with a convenient drawer to hold the index cards. The

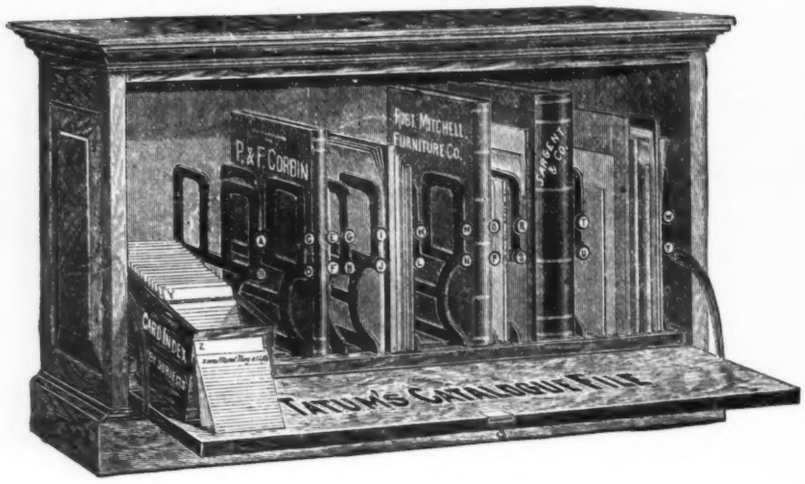


Fig. 1.—Tatum's Catalogue File.

"finder cards" are taller than the others and have the letters on them, alphabetically arranged, as in Fig. 3. Discounts or matters relating to the same articles may

Fig. 2.—Iron Partitions.

be entered on the same card. Thus the merchant may have a ready index capable of indefinite development, embracing all catalogues in a compact and accessible shape. He can have before him all

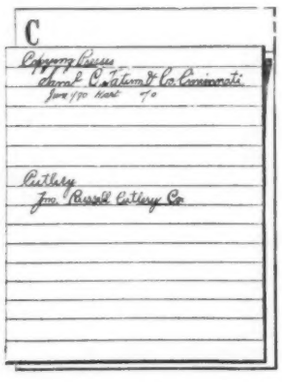
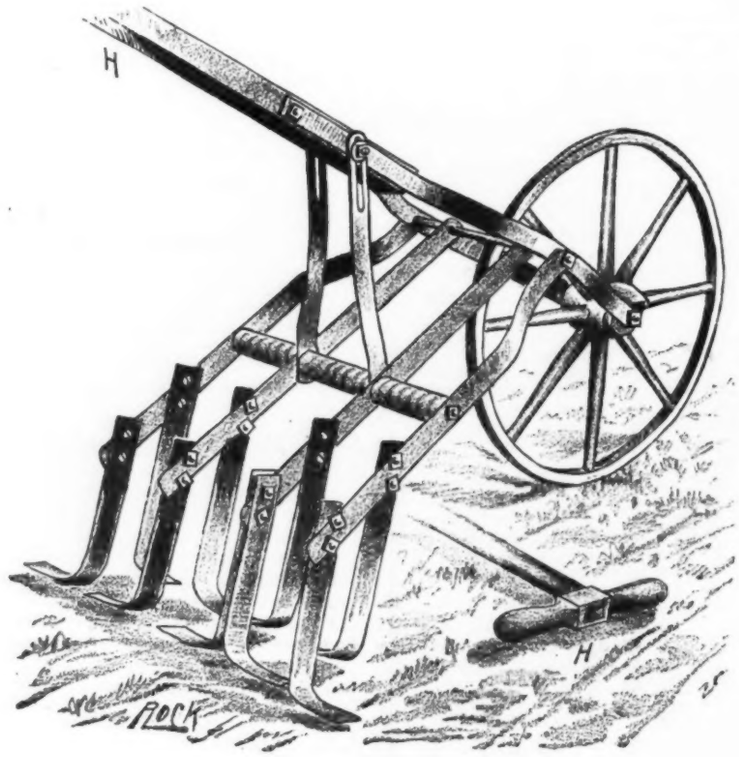


Fig. 3.—Cards Used in Card Index.

the information a buyer needs as to prices previously quoted, be it the day before or some months since.

The Elliott Wheel Scuffle Hoe.

Bartlett & Dow, Lowell, Mass., are introducing the Elliott Wheel Scuffle Hoe, as illustrated herewith. The hoe is all steel except the wheel and handle. The knives are alluded to as being made by hand and oil tempered. From the illustration it will be seen the frame is held together by two bolts with nuts on each end, the center bolt having on it a series of wood washers about ¼ inch thick. By removing the nuts from the bolt the washers can be removed or changed so as to bring



The Elliott Wheel Scuffle Hoe.

the knives into almost any position wanted, or can be entirely removed from the hoe to make it narrower, and replaced to make it wider. It is referred to as having a range in adjustment from 6 inches to 16 inches, with almost any width between the two extremes. The point is made that from two to eight knives can be used at pleasure; that it is adapted for work on garden crops, walks and roadways, and will do more work than four men with common hand or scuffle hoes can possibly do.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 12, 1890.

The Senate during the past week have devoted their time to the metal schedule, without any change of a material nature in their amendments. Representatives of the various branches of the industry are here watching the progress of the majority. It is conceded by them that the Senate amendments will go through practically intact, although their friends in the Senate hold out the expectation that some changes in the line of their wishes may be made when the bill gets into conference. The minority indulged in a lively demonstration against the increase of duty on tin plate. Their amendments favored first placing it on the free list, but also recognize a duty of 1 cent a pound. Senator Dawes presented the side of the majority when he said that that important article should either be put on the free list or have a protective rate as proposed in the Senate amendments. The 1 cent a pound duty was only a benefit to the foreign producer, as it was not sufficient to stimulate home manufactures. He believed in the highest rate, so that tin plate might be produced at home, and then the prices in the home market would come down to a lower figure than now, all on account of home competition. He said that this had been the experience of the country in its protective policy. As the duties maintained a protective standard, the supply of the home market from home establishments soon made lower prices.

A great deal has been said on the subject of reciprocity, practically all the newspapers being ignorant of the real status of the case. The President believes in the feasibility of the scheme, and is willing to give it his countenance; but he will not do so except with the concurrence of the House Committee on Ways and

Means and Senate Committee on Finance He is not disposed to press the subject. He has mentioned his views to Senators and Representatives. Senator Aldrich is now formulating a plan which will be a matter of conference with the Republican members of the Ways and Means. If they persist in their opposition nothing will be done. There is a great deal of 1892 Presidential convention politics in the Opposition in the House.

The stir created in foreign countries over the provisions of the Tariff bill, as they appear in the House measure, is not disturbing any one in Congress or in the executive branch of the Government.

VIRGINIA IRON NOTES.

Something has already been said in a cursory way in this correspondence relative to the new hardware factory being established at Basic City. Its magnitude entitles it to a more extended mention. On July 28th the Basic City Hardware Company were incorporated with a paid up capital of $150,000, which will be increased to $250,000 as soon as the company begin the manufacture of their various specialties. The officers of the company are: President, Samuel Foner, who is also president of the Basic City Land Company; vice-president and general manager, Daniel H. Fitzgerald, of Scranton, Pa.; secretary and treasurer, Arthur Fitzpatrick, of New York City. The board of directors consists of all of the above, together with Charles M. Hughes, Jr., cashier First National Bank of Lima, Ohio; Richard P. Bruff, capitalist, of New York City; O. F. Swift, member of the Buffalo, N. Y., Lock Company; Arthur Fitzpatrick, formerly with the Pittsburgh iron firm of the Moorhead, McCleane Company; James Bumgardner, Jr., of Staunton, Va.; J. E. Sanger and J. A. Wise, of Basic City. This enterprise is an outcome of the Buffalo Lock Company, now claimed to be employing 2500 men, and which plant is to be gradually absorbed by the new concern at Basic City. The buildings of the Basic City Hardware Company are said to be the largest of the kind in the South, and when entirely completed will be, it is claimed, without an equal in point of convenience and handsome appearance in the country. The entire building is of granite, iron and brick, and will be rendered absolutely fireproof by the application of corrugated roofing and plating. The plant was erected from special designs by General Manager Fitzgerald, and is so planned that its capacity can be increased at any time at a small cost, and without causing any delay in operations. An idea of the extensive proportions of this structure can be obtained from the following dimensions: The foundry room is 200 x 75 feet; the machinery department, 250 x 50 feet; the finishing room, 425 x 37½ feet; the Japan house, 50 x 25 feet; the pattern safe, 20 x 12 feet. The plant will be supplied with the most modern machinery and the latest improved devices for labor saving. In addition to a general line of builders' hardware, the company intend manufacturing bronze, brass and nickel plated goods. At present there are 214 men at work on the buildings and the details of the plant, and by a few more months this big enterprise will be actively in operation.

The twin plant of the Glenwood Furnace Company, recently reported as having commenced construction at Glasgow, is under the contract of Julian Kennedy, of Pittsburgh, Pa. The work just begun will consist when completed of an improved 100-ton blast furnace, and upon its completion the second furnace will be commenced.

It is currently stated at Norfolk that the Norfolk and Western Railroad Company contemplate establishing at Lambert's Point, near that city, machine shops that will be the largest of any in the Norfolk and Western system, employing several hundred skilled workmen. The preliminary work is said to have been already started, and operations are expected to soon begin on an extensive scale. This company have big plans on foot for building up their interests at Lambert's Point. Fully six months ago they began at that place improvements to their already large facilities for handling the coal business of their road, and also improvements looking to the increase of their ability to handle other freight traffic. Their great coal pier, which has been running at an average capacity of 22,000 tons of coal per week, has been for some years the most conspicuous commercial figure in Norfolk harbor. The improvements alluded to, and which will be completed by November 1 or thereabouts, will include an additional coal pier of iron, which will double their present capacity in the coal trade, and they have in prospect the construction of still another coal pier of capacity similar to each of the others. These improvements necessitated the making of 27 acres of new ground, which contains 37,500 cubic yards of filling material. This new ground has 900 feet frontage on the river and from it the new piers start. The pier now under coustruction is to be 805 feet long, 62 feet wide and 50 feet high. On the mainland the six miles of railroads tracks will be supplemented by four additional miles, These improvements when completed will cost the Norfolk and Western people $500,000. The timber approach to the new iron pier and the timber protection for the piling of the pier is under way. Part of the pier itself, which was made by the Pencoyd Iron Company, near Philadelphia, is on the spot. The substructure of the pier will be wrought iron piles, with cast iron disks at the lower end. These piles are to be sunk by the water jet process. The superstructure will be of wrought iron. The work of sinking the iron piles will begin in a week or so. The large new warehouse on what is known as the warehouse pier is covered with galvanized corrugated iron and has a roof of four-ply felt, covered with tar and gravel. All of the woodwork of these improvements required 3,000,000 feet of fine timber. The chief engineer of the Norfolk and Western Railroad, W. W. Coe, has general control of the work and Walter L. Keen is the engineer in charge. The general contractors are Cofrode & Evans, of Pottstown, Pa. The galvanized iron work was done by Barnard & Co., of Norfolk.

The Low Moor Mining and Development Company have been organized with ample capital and the following officials: President. S. M. Yost, of Staunton; vice-president and general manager, Ham. Sheffard, of Warrenton; secretary and treasurer, John McQuaide, Staunton. The directors are all of the above (except Mr. Sheffard), John S. Barbour, Alexandria; S. W. Venable, Petersburg; G. A. Washback, Alexandria; J. W. Perry, Norfolk, and Linden Kent, Washington, D. C. At Low Moor an iron furnace has been in successful operation for years before the present iron development in the State. The industry there is of the most substantial nature, and though no attempt has ever been made to found a town, quite a little settlement has sprung up around the furnace, and now the new company, who have acquired possession of the furnace property and about 500 acres of land adjacent, intend laying off a town and builing up an industrial community. The strong names behind the undertaking are a surety of its success.

At a meeting of the stockholders of the Vulcan Iron Company, at Richmond, last week, T. Seddon Bruce was re-elected president, and Albert C. Bruce was chosen to succeed Philip A. Bruce as secretary and treasurer. The following were elected directors: P. Seddon Bruce, Albert C. Bruce, James Allison, B. Rand. Wellford and Charles F. Taylor. The business of this company, as exhibited by the reports of officers, show the same to be better than it has ever been in the history of the company. A good many changes and improvements have recently been made on this company's plant, and these in turn will give place to additional ones if the business of the company increases at its present ratio.

At Luray, the Luray Agricultural Implement Works have been formed, with $10,000, the purpose of establishing an agricultural implement factory. S. G. Gilmer is president and H. V. Hudson secretary.

A company has been incorporated at Buena Vista, with $300,000 capital, to build and operate boiler and machine works.

The New York Steam Company have formed a new industry in connection with the manufacture of steam. This is the manufacture of ice, and already three factories are building at different power stations. In the rear of the Washington street power station a five-story brick and stone building has been erected, which will contain the consolidated ice machine of Chicago. The De La Vergne Company, of this city, will supply the machine at the station, at 525 East Eighteenth street, and the Arctic Company, of Cleveland, furnish the plant for the factory, at 116th street and the East River. The 116th street factory, according to Mr. Shaffer, the vice-president, will be ready to turn out ice in about three weeks, its capacity being about 60 tons a day. The capacity of all three factories will be from 275 to 300 tons. "The contract price for the factories and plants is $300,000," said Mr. Shaffer, "and the machine which does the work at the least expense will be ultimately placed in all the factories."

The erection of another notable building is shortly to begin in Chicago. It is estimated that the structure will cost $1,700,000. Six thousand tons of iron and steel will be used in its framework, and over 200 miles of iron or steel pipe will be consumed in fitting up refrigerating rooms. It will be known as the Chicago Cold Storage Exchange, and will be used by dealers in produce. The site of the building is on the west side of the city, and it will have frontages on Randolph and Lake streets and the Chicago River. Tracks connecting with the entire railroad system of the city will extend into the building.

Jay C. Morse, of the Illinois Steel Company, and F. C. Frick, Pittsburgh, have returned to the West after a brief stay at the seashore.

CONTENTS.

CURRENT HARDWARE PRICES.

AUGUST 13, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Adjusters, Blind.
Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20&10%

Ammunition.—
Caps, Percussion, ₱ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60
Cartridges—
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting.....15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%
Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00.....2%
All other Primers, $1.20.....2%
Shells—
First quality 4, 8, 10 and 12 gauge.....25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands.....33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.....65&2%
Shells Loaded—
Standard List, July 19, 1890..40&10&5%
Wads—Price per M.
U.M.C.&W.R.A.—B.E., 11 up... 68¢
U.M.C.&W.R.A.—B.E., 9&10... 82¢
U.M.C.&W.R.A.—B.E., 8..... 96¢
U.M.C.&W.R.A.—B.E., 7..... $1.10
U.M.C.&W.R.A.—P.E., 11 up.. 1.15
U.M.C.&W.R.A.—P.E., 9&10.. 1.50
U.M.C.&W.R.A.—P.E., 8..... 1.70
U.M.C.&W.R.A.—P.E., 7..... 1.80
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80
Dis. 50&2

Anvils.—
Eagle Anvils, ₱ ₺ 10¢.....15@15&5%
Peter Wright's.....10½¢
Armitage's Mouse Hole.....9½¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%
Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5 %

Apple Parers—See Parers, Apple, &c.

Augers and Bits—
Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company.
70@70&10%
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits...30&10%
Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Expansive Bits—
Clarks' small, $18; large, $26...37½@35&2%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%
Gimlet Bits—
Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut Shepardson's.....45@15&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%
Hollow Augers—
Ives
French, Swift & Co.
Douglass'
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
33⅓ @ 33⅓&10%
Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—
Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg, ₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢.....40@40&10%
Awls, Shouldered Brad...2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch, ₱ doz, $1.50.25&30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others	7.50	8.00

Note.—Jobbers often sell at lower prices than the above.

Axle Grease—See Grease, Axle.

Axles—
No. 1.4¼@5¢, No. 2 5½@6¼¢
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
3 % cash
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling.....33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₱ doz.....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.
Crow—
Cast Steel.....₱ ₺ 4½¢
Iron, Steel Points.....₱ ₺ 3½¢

Basins, Wash—
Standard Fiberware, No. 1, 10¼-inch, $2; 12-inch, $2.25; 13½-inch, $2.70; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters, Egg, &c—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %
Dover.....₱ doz $1.50
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.).....₱ doz $3.50
Bryant's.....₱ gro $14.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Bells—
Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ₺ 3¢@3½¢
Steel Alloy Church and School Bells..40%
Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank, Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connell's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%
Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%
Hand—
Light Brass.....75&10%
Extra Heavy.....55&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Bellows—
Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—
Common Standard.....70@70&5%
Standard.....60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—
Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—
Ordinary Tackle, list May 20, 1889.....50&10@60%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Boards, Stove.
Wood Lined "Crystal".....50%
"Embossed".....50%
"Oxidized".....45%
Paper Lined Zinc.....55%
"Crystal".....55%
"Embossed".....55%
"Oxidized".....45%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84.....70&10&7½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890.....75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush. Com'n " ....55&10%
Stove and Flow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%
Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.
Common and Kind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

Boxes, Axle.
Per ₺.....9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ₺.....2¾¢

Braces.—
American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....80%
Nos. 30 to 33.....80%
Nos. 40 to 63.....50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5&50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—
Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent s list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—
Benis' Self-Basting. Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
New Haven.....50%

Buckets, Well.
Galvanized—
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@4.25

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.
.70&5@70&10%
Wrought Steel—
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
.70&5@70&10%
Bronzed Wrought Butts.....60

Calipers—See Compasses.

Calks, Toe—
Gantler.....₱ ₺ 5½@6¢
Dewicks (Burke).....₱ ₺ 5½@6¢

Can Openers—See Openers, Can.

Cards—
Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—See Ammunition.

Casters—
Bed.....
Plate.....
Shallow Socket.....
Brass....55@55&10%
Others...60@60&10%
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50& 10@60%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$5.00	5.70	4.80	4.20	3.90	3.75	3.65	3.55

Less than cask lots, add ½¢@1½¢ ₱ ₺.
German Coil, list of June 20, 1887.....50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ₺ 5½¢@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—
White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.
New Haven
Witherby.....
Mix
Ohio Tool Co.
.75 @ 75&10
Douglass.....75@75&5%
Buck Bros.....50%
Merrill.....60&10@60&10&5%
L. & J. White.....80@80&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₱ ₺.....15@1 %

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.. 25%
Skinner's Patent Chucks. 33⅓&5%
Combination Lathe Chucks 40%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co., $8.50, 25%
Victor 40%
Combination 40%
Universal 40%
Independent 40%

Churns.

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

Clamps—

R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati 15&10%
Adjustable, Hammers 15%
Adjustable, Stearn's 30@30&10%
Stearn's Adjustable Cabinet and Corner 30@30&10%
Cabinet, Sargent's 60&10%
Carriage Makers', Sargent's 70&10%
Carriage Makers', P., S. & W. Co. 40&10%
Eberhard Mfg. Co. 40&10&40&10%
Warner's 40&10@40&10&5%
Saw Clamps, see Vises. Saw Filers'.
Carpenters', Cincinnati 25&10%

Cleavers.

Butchers'.
Bradley's 25@30%
L. & I. J. White 20&5%
Beatty's 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W. 33⅓&5@33⅓&10%
Foster Bros. 30%
Schulte, Lohoff & Co. 40@40&5%

Clips—

Norway, Axle, ¼ & 5-16 55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips 60⅔&5@70%
Norway Spring Bar Clips, 5-16 60&5&5%
Wrought-Iron Felloe Clips ₩ lb, 5½¢
Steel Felloe Clips ₩ lb, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes 50%

Cocks, Brass.

Hardware list 50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co. 40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list. 50%
Chapman Mfg. Company 50&10@60%

Combs, Curry.

Fitch's 60&10@50&10&10%
Rubber, per doz $10.00 20%
Perfect 50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers 60&5%
Compasses & Calipers 50&5%
Wing and Inside or Outside 50&5%
Double 60%
(Call's Pat. Inside) 30%
Excelsior 50%
J. Stevens & Co.'s 25&10%
Starrett's
Spring Calipers and Dividers 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coopers' Tools—See Tools, Coopers'.

Cord, Sash—

Common ₩ lb 10@11¢
Patent, good quality ₩ lb 13@13½¢
White Cotton Braided, fair ₩ lb 28@29¢
Common Russia Sash ₩ lb 13½¢
Patent " " ₩ lb 15¢
Cable Laid Italian Sash ₩ lb 22@23¢
Indian Cable Laid " " ₩ lb 13¢
Silver Lake—
A Quality, White, 50¢ 10&10&5%
A Quality, Drab, 55¢ 10&10&5%
B Quality, White, 50¢ 28@40%
B Quality, Drab, 55¢ 31@33%
C Quality, White (only) 26½@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab, 30¢
Semper Idem, Braided, White 30¢
Egyptian, India Hemp, Braided 25¢
Samson—
Braided, White Cotton, 50¢ 30@30&5%
Braided, Drab Cotton, 55¢ 30@30&5%
Braided, Italian Hemp, 55¢ 30@30&5%
Braided, Linen, 80¢ 30@30&5%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.) 40%
Blake's Pattern ₩ doz $2.00, 10%
Turner & Seymour Mfg. Co. 50%

Cradles—

Grain 50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12¢@12½¢ 10%
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50 25%
M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50 25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.
Dixon's ₩ doz 40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's ₩ doz 40&5%
Nos. 100 150
$15.00 $18.00
Hales Pattern ₩ doz 70@70&5%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 30%
Nos. 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 30%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Great American Meat Cutter 30%
Nos 112 116 118 120 122
Each $2.00 $2.75 $3.00 $2.50 $4 00
Miles' Challenge ₩ doz 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1 ₩ doz, $26.00, 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 20@25%
Great American 30%
Beef Shavers (Enterprise) 20&10@30%
Little Giant 50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.
Champion 20&10@30%
Wood Bottom ₩ doz $5.00@$5.25
All Iron ₩ doz $4.25
Nashua Lock Co.'s ₩ doz, $18.00 50@55%
Wilson's 55%
Sargents's ₩ doz, $24, 55&10%
Acme ₩ doz $20.00, 40%

Washer.
Smith's Pat. ₩ doz $12.00, 20&10&10%
Johnson's ₩ doz $11.00, 33⅓%
Penny's ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's ₩ doz $16.00, 60&10%
Bonney's 30&10%
Cincinnati 25&10%

Cutlery—

Beaver Falls & Booth's 33⅓%
Wostenholme $7.75 to $

Dampers, &c—

Dampers, Buffalo 40&10%
Buffalo Damper Clips 40&10%
Crown Damper 40%
Excelsior 40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers ₩ doz $16.00@17.00
Leed's ₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant ₩ doz. $18.00
Kohler's Hercules ₩ doz. 15.00
Kohler' New Champion ₩ doz. $9.00
Schnieder ₩ doz. $18.00
Ryan's Post Hole Diggers ₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5&50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15 45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz $18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths' each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W. 40&10%
Breast, Wilson's 30&5%
Breast, Millers Falls each $3.00, 25%
Breast, Bartholomew's each $2.50, 25&10@40%
Ratchet, Merrill's 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's 20@20&5
Ratchet, Whitney's 20&10%
Retchet, Weston's 20@25%
Ratchet, Moore's Triple Action 25@30%
Ratchet, Curtis & Curtis 30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00 20&10%
Wilson's Drill Stocks 10%
Automatic Boring Tools $1.75@$1.85

Twist Drills—
Morse 50&10&5%
Standard 50&10&5%
Syracuse (Metal list) 50&10%
Cleveland 50&10&5%
Williams 50&10&10%
New Process 50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co. 20@20&10%
Disston's f 0%
Buck Bros. 30%
Stanley R. & L. Co.'s
Varnished Handles 65&10%
Black Handles 60&10%
Sargent & Co.'s
No. 1 Forged Blade 60&10&10%
Nos. 20, 30 and 60. 66⅔&10&10%
P. S. & W. 70 %
Knapp & Cowles No.1 60&10&70%
No. 1 Extra 60@60&10
Nos. 00 & 4 50&5@50&10&5%
Stearns' 25&10&5%
Gay & Parsons 35%
Champion 25&10%
Clark's Pat. 30@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits 30&30&5%
Screw-Driver Bits ₩ doz. 50@75¢
Screw-Driver Bits, Parr's ₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel 50%
Cincinnati 25&10%
Brace Screw Drivers 25&10%
Buck Bros.' Screw-Driver Bits $

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4¾¢	5½¢	2¾¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread 60@60&10%
Wood 25%

Expanded Metal.

List No. 5.

Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00 20@20&10%
Van Sand's Screw Pat., $15 ₩ gr. 60&10%
Van Sand's Old Pat., $15.00 ₩ gr. 55&10%
Washburn's Old Pattern, ₩ gr. $9.00
Merriman's new list
Austin & Eddy No. 2008 ₩ gr. $9.00
Security Gravity, ₩ gr. $9.00

Faucets.—

Fenn's 40%
Bohren's Pat. Rubber Ball 25%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list 60%
Metallic Key, Leather Lined 60&10@
60&10&10%
Cork Lined 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl lots 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar 50%
Goodenough Cedar 50%
Boss Metallic Key 50%
Reliable Cork Lined 60%
Western Pattern Cork Lined 50%
Self-Measuring
Enterprise, ₩ doz $50.00 20&10%
Lane's, ₩ doz $36.00 25&10%
Victor, ₩ doz $36.00 25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati 45&5%
Brewster. 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c 60&10@60&10&5%
Nicholson (X. F.) Files 25%
Nicholson's Royal Files (Seconds) 75%
(extra prices on certain sizes)
Other makers, best brands 60&20%
Fair brands 60&10&10@70&5%
Second quality 70&10@75&10%
Nicholson's Horse Rasps 60&10@60&10&5%
Heller's Horse Rasps 50&7½@50&10%
McCaffrey's Horse Rasps. 50&10%
Chelsea Horse Rasps, Hand Cut 50&10%

Imported—
Moss & Gamble....List, April 1, 1883, 15%
Butcher Butcher's list, 20%
Stubs Stubs list, 25@30%
Turton's Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—
Sargent's Patent 70&10%
Reading Hardware Co 30&10%
P., S. & W. Co 50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List 70%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Frames—

Saw—
White Vermont ₩ gro $9.00@10.00
Red, Polished and Varnished ₩ doz $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons 33⅓@33⅓&10%
Stearns' Frames and Corners 25@25&10%

Freezers, Ice Cream—

White Mountain 60@60&5%
Granite State 65@65&5%
Arctic 70@70&5¢
American 60%
Buffalo Champion 65@65&5%
Shepard's Lightning 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60
Peerless and Giant 60&10
Zero and Pet 65&10
Boss 65&10&10
Keystone, P. D. & Co., each, $1.50 20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro. 30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz. 30 %

Fuse— ₩ 1000 ft
Common Hemp Fuse, for dry ground $3.70
Common Cotton Fuse, for dry ground 2.35
Single Taped Fuse, for wet ground..
Double Taped Fuse, for very wet gr. 4.35
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates, Molasses—

Stebbin's Pattern 75&10@80%
Stebbin's Genuine 60&10&10%
Stebbin's Tinned Ends 40&10%
Chase's Hard Metal 50&10%
Sush's 20%
Lincoln's Pattern 70@70&10%
Weed's 20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 60&10&10%

Gauges.

Marking, Mortise, &c. 60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list 10&10%
Wire, Wheeler, Madden & Co 10%
Wire, Morse's 50@50&5%
Wire, Brown & Sharpe's 10@20%
Wire, P. S. & W. Co

Gimlets—

Nail and Spike 50&10&5%
"Eureka" Gimlets 40&10%
"Diamond" Gimlets ₩ gr $5.00
Double Cut, Shepardson's 45@45&5%
Double Cut, Ives' 60@60&5%
Double Cut, Douglass' 40&10%
"Bee," ₩ gr $12 25@25&5%

Glue—

Le Page's Liquid 25@25&5%
Upton's Liquid 35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes ₩ gr $9.50
Dixon's Everlasting, in bxs. ₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory ₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts. Awl.

Sewing, Brass Fer. ₩ gr, $3.50 45&10%
Pat. Sewing, Short. $1.00 ₩ doz 40&10%
Pat. Sewing, Long ₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00 45&10%
Pat. Peg, Leather Top. ₩ gr $12.00. 45&10%

Halters.

Covert's, Rope, ½-in. Jute 50&2%
Covert's, Rope, ½-in. Hemp 50&2%
Covert's Adj. Rope Halters 40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters 35&2 %

Hammers—

Handled Hammers—
Maydole's, list Dec. 1, '85 25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Fayette R. Plumb. 50@50&10%
C. Hammond & Son
Hartford Hammer Co.
Verree
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75 30&10%
Nelson Tool Works 40&10%
Warner & Nobles 20@25
Peck, Stow & Wilcox 40%
Sargent's 33⅓&10%

Heavy Hammers and Sledges—
3 lb and under ₩ lb 40¢
3 to 5 lb ₩ lb 36¢ 70@70&10%
Over 5 lb ₩ lb 30¢
Wilkinson's Smiths 10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods.

Handles—

Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 18¢; No. 6, 10¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢ 60%
Champion 15

Iron, Wrought or Cast—
Door or Thumb.

Nos.	0	1	2	3
Per doz.	$0.90	1.00	1.18	1.35

1.50 60&10&10

Roggin's Latches.....₱ doz 30@35%
Bronze Iron Drop Latches..₱ doz 70% net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd... ₱ gr 5.00
Apple Firmer Chisel, large... ₱ gr 6.00
Socket Firmer Chisel, ass'd... ₱ gr 3.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
} 40% slip
J. S. Smith & Co.'s Pat File.....50
File, assorted..... ₱ gr 2 75
Auger, assorted..... ₱ gr 5.00
Auger, large..... ₱ gr 7.00
} 40@ 40&10%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass..... ₱ set $1.22
Pat. Auger, Swan's..... ₱ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track 65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's .....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50&5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50@50&5%
Architect, ₱ set $6.00.....20%
Eclipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star .....40&10@40&10&5%
May .....50&5@50&10%
Barry, $6.00.....40&10%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's.
} 40 & 10 @ 50&5 %
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son...
Kelly's.
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour .....70&2%
Nicholson.....45&10%
Huffer 50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible. ...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 8, for Brick, $11.50. .....10%

Gate Hinges—

Western.....₱ doz $4.40, 60%
N. E. .....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Automatic .....₱ doz $12.50, 50%
Common Sense.....₱ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's .....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March, 886 .....20%
Acme.....30%
J. S. .....25&10%
Empire and Crown.....20%
Hero and Monarch 55%
American, Gem, and Star.....30%
Oxford.....30%
Barker's Double Acting..... 25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago 30%
Wiles' 10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%

Wrought Iron Hinges

Strap and T.....75&10%
Screw Hook and Strap..... { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Heavy Welded Hook..... { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Screw Hook and Eye } { ⅜ in., ₱ doz $1.50 / ½ in., ₱ doz $2.45 / ¾ in., ₱ doz $5.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₱ ℔ .....5¢ / over 12 in., ₱ ℔. ...4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat. .....45&5%
Sandusky Tool Co., S. & O. Pat. { 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat. { 50&10&5 @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub..... .....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton, &c..... .....70%
Warren Hoe.....60%
Magic.... .....₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ doz $18.....60%

Bit.

Extension,
Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal. .....₱ doz $24.00, 40%
Angular..... ₱ doz $24.00, 40&5%

File and Tool—

Balz Pat.....₱ doz $4.00; 25%
Nicholson File Holders..... 20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
Clothes Line, Reading list. 60&10&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading..50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....45%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt. .....80@80&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks ... .See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra..... 50&10@6C%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable..... ....₱ gr $8.00
Blair's Adjustable Clipper... ..₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₱ 100 ℔, $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons.....40@40&10%
Enterprise Star Irons..... ...40@40&10%
Cold Handle Sad Irons.....40&10@50%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons..... .....25%
B. B. Sad Irons, ₱ ℔..... .....3 @3½¢
Combined Fluter and Sad Iron, ₱ doz, $15.00..... .....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England..... .....8¢, 15%
Mahony's Troy Foil Irons..... .....25%
Sensible..... .....20@20&5%
National Self-Heating..... .....30 %

Soldering—

Soldering Coppers..... ₱ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy..... .....25%

Kettles— Spun. Stamped.
Brass, 7 to 17 in., ₱ ℔.... 24¢ 22 ¢
Brass larger than 17 in., ₱ ℔..... 26¢ 24½¢
Enameled and Tea—See Hollow-Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c..... ...40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw .....See Hay Knives.
Table and Pocket .....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's..... .....10%
Wadsworth's..... .....25%

Drawing—

Witherby.....
P. S. & W .....
Mix .....
New Haven.....
} .75 @ 75&10 %
Merrill .....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, Mfrs', price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay .....₱ doz. $8.00 @ $9.00

Mincing.

Am. (2d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's..... .....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 .....40@45%
Knapp & Cowles. .....50&10@60%
Buffalo Adjustable.....₱ doz $3.00 .25%
Buffalo Double Adj'table. ₱ doz $3.00 25%

Knobs—

Door Mineral..... .....60@65%
Door Por. Jap'd.....70&75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles.—
Melting, Sargent's.....55&10%
Melting, Reading. .....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W .....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards.....$4.00@4.25
Sq. Lift Wire, with Guards.....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75.....20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....66⅔&10%
Hotchkiss..... .....30%
Peck, Stow & W. Co..... ...60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Aug. 1, 1889-
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 12 16 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deltz, Nos. 36 to 39.....40%
Deltz, Nos. 51 to 63.....40&10%
Deltz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@60 &10&10
Mallory, Wheeler & Co., list July, '88..... } Much lower net
Sargent & Co., list Aug. 1, '88 } prices
Reading Hardware Co., list Feb. 2, '88.. } often made.
Brittan, Graham & Mathes, list Jan. 1890 .....C0&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deltz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List Dec. 23, '84. .....75@75&10%
Brittan, Graham & Mathes..... 75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deltz.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshos.....₱ doz, $9. 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat..... .....25%
Scandinavian..... .....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140..... .90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 41 line.....45&5%
No. 31 line .....60&5%
No. 21 line.....75@5%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr. ..33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal..... .....30%
Kempshall's Gravity.....50%
Kempshall's Model .....60@60&10%
Corbin's Daisy, list Feb. 15, 1886...70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00. .....20&10%
Davis, Bronze, Barnes Mfg. Co..... 50%
Champion Safety, list March 1, 1888 55&55&5%
Security.....70%
Buckeye.....₱ gro $4.80

Lumber Tools—See Tools, Lumber

Lustro—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... .....$17.00

Machines.

Boring—

Without Augers.	Upright.	Angular.
Douglass.....	$5.50	$6.75.....50%
Snell's, Rice's Pat.	5.50	6.75...40&10&10
Jennings	5.50	6.75...45@45&10
Other Machines...	2.35	2.75.....
Phillips' Patent with Augers ...	7.00	7 50 .....

Fluting.

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls.. .....$3.60 each }
Eagle, 3½-inch Roll. $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter .....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00. .....30%
Shepard Hand Fluter, No. 85 ₱ doz $15 30 . ..... 40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00 ..... 40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00 ..... 40%
Clark's Hand Fluter. ₱ doz $15.00 ..... 35%
Combined Fluter and Sad Iron, ₱ doz $15.00 ..... 30%
₱ doz $10.00 ..... 10%
Buffalo .....

Hoisting—
Moore's Hand Hoist, with Lock Brake 20%
Moore's Differential Pulley Block 40%
Energy Mfg. Co's 25%

Mallets.

Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. ..... 30@30&10%

Mattocks. Regular list ..... 60&10%

Measures—

Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888 ..... 60&2%
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros ..... 20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.

Leading makers ..... 60@60&10&5%
Other makers ..... 60&10&5@60&10&10%
Pennsylvania 60%
Continental 60%
New Model ..... 60&10&5%
New Quaker City ..... 60&10&5%
Great American ..... 60&10&5%

Muzzles—

Safety ..... ₱ doz, $3.00, 25 %

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89. .75@75&5%
Tack Mfrs.' list ..... 60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base ..... $2.50 @ $2.60

Horse—

Nos.	6	7	8	9	10
Ausable	.28¢	26¢	25¢	24¢	23¢.

40&5&2%

Clinton, Fin. ..... 11¢
Essex ..... 28¢ 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Lyra ..... 25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Snowden ..... 25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Putnam ..... 23¢ 21¢ 20¢ 19¢ 18¢.
1000 ℔ in year 15%
Vulcan ..... 23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n. 25¢ 23¢ 22¢ 21¢ 20¢.
25@25&5%
Globe ..... 23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
Boston ..... 23¢ 21¢ 20¢ 19¢ 18¢.20&2½%
A. C ..... 25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33⅓&5%
C. B.-K ..... 25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33⅓&5%
Champlain .28¢ 6¢ 25¢ 24¢ 23¢.
25&10&10%
New Haven..28 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Saranac ..... 23¢ 21¢ 20¢ 19¢ 18¢..30&10%
Champion ..... 25¢ 23¢ 22¢ 21¢ 20¢.
10&10&10%
Capewell ..... 28¢ 26¢ 5¢ 24¢ 23¢.
35&5@35&10%
Star ..... 23¢ 21¢ 19¢ 18¢.
10&10@10&12½%
Anchor ..... 23¢ 21¢ 20¢ 19¢ 18¢ 35%
Western ..... 23¢ 21¢ 20¢ 19¢ 18¢..40&10%
Empire Bronzed ..... 14 ₱ ℔.

Picture—
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—

Nuts, off list Dec. 18, 1889: Square. Hex.
Hot Pressed ..... 5.55¢ 6.10¢
Cold Punched ..... 5.10¢ 5.00¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—

Government ..... ₱ ℔ 7@7½¢
U. S. Navy ..... ₱ ℔ 6@6½¢
Navy ..... ₱ ℔ 5½¢@5½¢

Oilers—

Zinc and Tin ..... 65@65&10%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams 50%

Openers, Can.

Messenger's Comet ..... ₱ doz $3.00, 25%
American ..... ₱ gross $3.00
Duplex ..... doz 25¢, 15@20%
Lyman's ..... ₱ doz $3.75, 20%
No. 4 French ..... ₱ doz $2.25, 55@60%
No. 5, Iron Handle ..... ₱ gr $6.00, 45&50%
Eureka ..... ₱ doz $2.50, 10%
Sardine Scissors ..... ₱ doz $2 75@3.00
Star ..... ₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
Excelsior, No. 1, $2.50; No. 2, $1.50...40%
World's Best, ₱ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00..... 50&10%
Universal, ₱ doz $3.00..... 35&5%
Domestic, ₱ doz $2.50..... 15%
Champion ₱ doz $2.00.....

Packing, Steam—

Rubber—
Standard ..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard. 40&10@50%
N. Y. B. & P. Co., Empire ..... 60&5@65%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 10@15%
Jenkins' Standard. ₱ ℔ 80¢,...25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.

Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75	
Whiting's	2.75	3.00	3.25	
Sidney Shepard & Co	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $6.00
Fire, Stable and Milk, 14 qt .. ₱ doz $7.80
Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes ..... ₱ ℔ 6½¢
Large sizes ..... ₱ ℔ 5½¢
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 70&10%
Acme Fry Pans ..... 60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.

Apple.
Advance ..... ₱ doz $4.75
Baldwin ..... ₱ doz 5.25
Bonanza ..... ₱ doz 5.00
Champion ..... ₱ doz 7.25
Daisy ..... ₱ doz 4.00
Dandy ..... ₱ doz 7.50
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gem ..... ₱ doz 5.25
Gold Medal ..... ₱ doz 4.00
Ideal ..... ₱ doz 4.00
Improved Bay State. ₱ doz 27.00 @ 30.00
Little Star ..... ₱ doz 4.50
Monarch ..... ₱ doz 13.50
New Lightning ..... ₱ doz 5.50
Oriole ..... ₱ doz 4.00
Penn ..... ₱ doz 4.00
Perfection ..... ₱ doz 4.00
Pomona ..... ₱ doz 4.00
Rocking Table ..... ₱ doz 6.00
Turntable ..... ₱ doz 4.50
Victor ..... ₱ doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain ..... ₱ doz 4.00
72 ..... ₱ doz. 4.25
76 ..... ₱ doz 5.75
78 ..... ₱ doz. 6.50
Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—

Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co's....$17 and $18..... 60&10%
Peck, Stow & W. Co... 50&10&50&10&5%
Curtain—
Silvered Glass ..... net
White Enamel ..... net
Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—

List September 18, 1889.
1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1½ and over, Plain 60%
1½ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¼ and under 45%
2 to 4 inch 50%
4-inch and larger 52½%

Planes and Plane Irons—

Wood Planes—
Molding ..... 40&2%
Bench, First Quality ..... 55&2%
Bench, Second Quality ..... 60&2%
Bailey's (Stanley R. & L. Co.). ...40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.) ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes ..... 35@35&10%
Merrien Mal. Iron Co.'s ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co ..... 50@50&10%
Gage Tool Co.'s Self-Setting ..... 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co ..... 50@50&5%
Plane Irons—
Butcher's ..... $5.00@$5.25 to £
Buck Bros 30%
Auburn "Thistle" ..... } 35&2%
Ohio ..... }
Sandusky ..... }
S. & I. J. White 25%

Plates.

Felloe ..... ₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent ..... 30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33⅓%
Humason & Beckley Mfg. Co. .50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. .60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—

Regular List ..... 70&10@70&10&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%

Pokes, Animal—

Bishop's I. X. L. ..... ₱ doz $6.00
Bishop's O. K. ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Double Stale ..... ₱ doz $5.75
Eagle, Single Stale ..... ₱ doz $3.75
Buckeye, Single Stale ..... ₱ doz $2.75

Police Goods.

R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00: 3 Hands, Polished, ₱ doz $72.00: Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.

Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.

Joseph Dixon's ..... ₱ gro $6.00, 10%
Gem ..... ₱ gro $4.50, 10%
Gold Medal ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel. ₱ gro $ cans
Yates' Liquid, 2 3 5 10 gal....8¢ ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black ..... ₱ gro $3.50
Japanese ..... ₱ gro $3.50
Fireside ..... ₱ gro $2.50
Diamond O. K. Enamel ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish. ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00

Poppers, Corn—

Round or Square, 1 qt.. ₱ gr $10.00@10.50
Round or Square, 1½ qt.. ₱ gr $15@15.50
Round or Square, 2 qt.. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned 40%
Enameled ..... 40&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co ..... 20&10@30%
Henis ..... ₱ doz $3.00
Shepard's Queen City 40%

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $15.00, 10%
Giant, No. 2 ..... ₱ doz. $15.00, 10%
Pelican ..... ₱ doz, $9.00, 25%

Pulleys—

Hot House, Awning, &c ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 60&5&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Fulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "P" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 40

Pumps—

Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper Goods. 70@70&5%

Punches—

Saddlers' or Drive, good, ₱ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive. .50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality ..... ₱ doz $2.50@2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P. S. & W. Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P. S. & W. Co. 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door, Wr't Brass, ₱ ℔ 35¢ 15%
Sliding Door, Bronzed Wr't Iron. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door Light. In. ½ ¾ 1
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.15	2.70	3.25...net

Terry's Steel Rail, ₱ foot ..... 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—

Cast Steel, Association goods 70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... $12.00, 50&15
Canton Lawn Rake ..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razor

J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAA1, list Nov. 1, 1889 ..... 50%
Jordan's Old Faithful, list Nov. 1, '89. 50%
Electric ..... List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co 55%
Sargent's ..... 66⅔&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers ..... ₱ doz $2.00
Top of the Hill Rings ..... ₱ doz $1.25
Hill's Improved Ringers ..... ₱ doz $4.25
Hill's Old Style Ringers ..... ₱ doz $2.75
Hill's Tongs ..... ₱ doz $4.50
Hill's Rings ..... ₱ doz bxs $2.15@2.25
Perfect Rings ..... ₱ doz bxs $1.60@1.70
Perfect Ringers ..... ₱ doz $2.15@$2.25
Blair's Hog Ringers ..... ₱ doz $2.25@2.50
Blair's Hog Rings ..... ₱ doz 90¢@$1.00
Champion Ringers ..... ₱ doz $2.00
Champion Rings, Double ..... ₱ doz $2.25
Brown's Ringers ..... ₱ doz $2.00
Brown's Rings ..... ₱ doz $1.25@1.30

Rivets and Burrs—

Iron, list Nov. 17, '87 ..... 40%
Copper ..... 50&10%
Copper'd Iron, Be'tina Brand. 40%

Rivet Sets—See Sets.

Rods—

Stair, Brass ..... 25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—

Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—

Manufacturers' prices:
Manila...½ in. and larger ₱ ℔ 15 ¢
Manila ..... ⅜ in. ₱ ℔ 15½¢
Manila.....¼ and 5-16 in. ₱ ℔ 15½¢
Manila Tarred Rope ..... ₱ ℔ 14½¢
Manila, Hay Rope ..... ℔ ₱ ℔ 15 ¢
Sisal...½ inch and larger ₱ ℔ 12 ¢
Sisal ..... ⅜ in. ₱ ℔ 12½¢
Sisal..... ¼ and 5-16 in. ₱ ℔ 12½¢
Sisal, Hay Rope ..... ₱ ℔ 12 ¢
Sisal, Tarred Rope ..... ₱ ℔ 11½¢
Sisal, Medium Lathe Yarn. ₱ ℔ 11 ¢
Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope ..... ₱ ℔ 7½¢
1½% for cash in 10 days.
Wire—
List May 1, 1886.
Iron ..... 32½&2½%
Iron, Galvanized ..... 40&2½%
Cast Steel ..... 40&2½%

Rules—

Boxwood ..... 80&10&10@80&10&10&5%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... 25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—

Disston's Circular 45%
Disston's Cross Cuts 45%
Disston's Hand 20%
Woodrough & McParlin.
Hand, Panel and Rip 25%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ foot ..... 40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip 30%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ ft. 40¢

Atkins' Circular Shingle and Heading 50¢
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ₱ foot 24@25¢
Atkins' Hollow Back X Cuts ₱ foot 18¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 45%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c 25%

Hack Saws—

Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers' $15 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161 ₱ doz $6.75@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—See Beams, Scale.

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₱ doz $4.00, 10%
Box, 2 Handle ₱ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ₱ doz $3.50 net
Ship, R. I. Tool Co 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₱ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890, 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75%
Bed 25&5%
Hand Rail, Sargent's 60%&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list 50@50&5%
Jack Screws, P. S. & W 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

Cork—

Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

Machine—

Flat Head, Iron 55%
Round Head, Iron 50%

Wood—

List March 1, 1889.

Flat Head Iron	50%	Extra 5 @ 10 % often given.
Round Head Iron	40%	
Flat Head Brass	45%	
Round Head Brass	35%	
Flat Head Bronze	45%	
Round Head Bronze	35%	
Rogers' Drive Screws		66⅔%

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12. 2, $18 25%
Henry's Combination Haft ₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

Nail—

Square ₱ gr., $4.00@$4.25
Round ₱ gr. $3.25
Buck Bros 27½%
Cannon's Diamond Point ₱ gr., $12, 20%

Rivet.

Regular list 50&10%

Saw—

Stillman's Genuine ₱ doz $5.00@7.75, 40&5%
Stillman's Imita ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's No. 0, $8.00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold 40&10&50%
Atkin's Lever ₱ doz No. 1, $6.00
Atkin's Criterion ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₱ doz $15, 50%

Sharpeners, Knife.

Parkin's
Applewood Handles ₱ doz $6.00, 40%
Rosewood or Cocobolo ₱ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%

Shears—

American (Cast) Iron 75&10@75&10&5%
Barnard's Lamp Trimmers ₱ doz $3.75
Tinners' 50&2%
Seymour's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers 80@80&10%
Second quality C. S. Trimmers, 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list 60%
Electric List net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P. S. & W. Co 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888 50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

Ship Tools—

L. & I. J. White 20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, at factory. $4.00

Mule—

Add $1 ₱ keg to above prices.

Ox, Wrought—

Ton lots ₱ ℔ 9¢
1000 ℔ lots ₱ ℔ 9½¢
500 ℔ lots ₱ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.

Drop, ₱ bag, 25 ℔ $1.35
Drop, ₱ bag, 5 ℔ .32
Buck and Chilled, ₱ 25-℔ bag 1.60
Buck and Chilled, ₱ 5-℔ bag .37

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co.) 35%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son, list January, 1886 30%
Remington's (Lowman's Pat.) 20&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 60&5@60&10%

Shovels and Tongs—

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves—

Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters ₱ doz $2.00; ₱ gr $21.60
Electric ₱ gr $21.00
A. & W. Sifters ₱ doz 2.00
Hunter's ₱ doz $2.00
Smith's Adjustable Sifters ₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz.	80¢	$1.00
Mesh 20, Nested, ₱ doz.	95¢	1.10
Mesh 24, Nested, ₱ doz.	$1.15	1.25

Skeins, Thimble—

Western list 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case 50@50&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60&2%
Covered Spring 60&10&10%

Snaths, Scythe.

List 50&10@50&10&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers 40, 15, 10&5%
C. Rogers & Bros 40, 15, 10&5%
Rogers & Bro 40, 15, 10&5%
Reed & Barton 40&10%
Wm. Rogers Mfg. Co. 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. 40, 15, 10&5%
Holmes & Edwards Silver Co. 40, 15, 10, 5&5%
L. Boardman & Son 60%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50&5%
No. 49 Nickel Silver 50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal 50, 10&6%
18% Rogers' German Silver 60&6%
22% Rogers' Nickel Silver 50&6%
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver 50&5% cash
Boardman's Britannia Spoons, case lots 60&5% cash

Springs, Door.

Torrey's Rod, regular size ₱ doz $1.30
Gray's, ₱ gr., $20.00 20%
Bee Rod ₱ gr., $20.00 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75 %
Cowell's No. 1, ₱ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ₱ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 25@30@35%
Elliptic, Concord, Platform and Half Scroll 60@60&5%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron } 80 &10%
Nickel-Plated }
Try Square and T Bevels 60&10@60&10&10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's ₱ doz $2.00
Blair's "Climax" ₱ doz $1.25

Lemon—

Porcelain Lined, No. 1 ₱ doz $6.00, 25&30%
Wood, No. 2 ₱ doz $3.00, 35%
Wood, Common ₱ doz $1.70@1.75
Dunlap's Improved ₱ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz 25&10%
Jennings' Star ₱ doz $2.50
The Boss ₱ doz $2.50
Dean's Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant 50@50&5%
King 40&5%
Hotchkiss Straight Flash ₱ doz $12.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger ₱ ℔ 7@7½¢
Barbed, ⅜ in ₱ ℔ 8@8½¢
Fence Staples, Galvanized, Fence Staples, Plain } Same price as Brd Wire. See Trd. Rep.

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods 40@40&10%
Butterfield's Goods 40@40&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30%
Gardner 25%

Stops, Bench.

Morrill's ₱ doz $9, 50%
Hotchkiss's ₱ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ₱ doz $3 10%
Cincinnati 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ₱ ℔ 2½¢
Washita Stone, Extra ₱ ℔ 20@21¢
Washita Stone, No. 1 ₱ ℔ 15&16¢
Washita Stone, No. 2 ₱ ℔ 11@12¢
Washita Slips, No. 1, Extra ₱ ℔ 37@40¢
Washita Slips, No. 1 ₱ ℔ 25&26¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ₱ ℔ 40¢
Turkey Slips ₱ ℔ $1.00@1.50
Lake Superior, Chase ₱ ℔ 16¢
Lake Superior Slips, Chase ₱ ℔ 31@32¢
Seneca Stone, Red Paper Brand ₱ ℔ 18@20¢
Seneca Stone, High Rounds ₱ ℔ 20@25¢
Seneca Stone, Small Wheels ₱ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ₱ doz $2.25
Cast Iron, Steel Points ₱ doz 80¢
Socket ₱ doz $1.75
Bullard's 25@25&10%

Strops, Razor—

Genuine Emerson 60@60&5%
Imitation " ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com. ₱ doz $2.00
Lamont Combination ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89 50%
Electric List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ₱ doz, No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@30%
Silver's 40&10%

Sweepers, Carpet.

Bissell No. 5 ₱ doz $17.00
Bissell No. 7 New Drop Pan. ₱ doz $19.00
Bissell, Grand ₱ doz $36.00
Grand Rapids ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ₱ doz $15.00
Jewel ₱ doz $17.00
Improved Parlor Queen,
Nickeled ₱ doz $27.00
Japanned ₱ doz $24.00
Excelsior ₱ doz $22.00
Garland ₱ doz $24.00
Parlor Queen ₱ doz $24.00
Housewife's Delight ₱ doz $15.00
Queen ₱ doz $16.00
Queen, with band ₱ doz $18.00
King ₱ doz $30.00
Weed, Improved ₱ doz $18.00
Hub ₱ doz $16.00
Cog-Wheel ₱ doz $16.00
Conqueror ₱ doz $22.00
Easy ₱ doz $22.00
Monarch ₱ doz $22.00
Goshen ₱ doz $21.00
Advance ₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2 ₱ doz $16.00
American ₱ doz $15.00
Grand Republic ₱ doz $35.00

Tacks, Brads, &c.—

List Oct. 19, 1889.

Carpet Tacks—
American Iron, Blued 70%
American Iron, Tin'd or Cop'd. 70%
Steel, Plain or Bright 70%
Steel, Tinned or Coppered 70%
Swedes Iron, Blued 70%
Swedes Iron, Tinned or Cop'd. 70%
American Iron Cut Tacks 67½%
Swedes Iron Upholst'rs' Tacks, S. S. 70%
Swedes Iron Upholsterers' Tacks, Tinned, S. S. 70%
Swedes Iron Card and Upholsterers' Tacks, Lanc. 66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc. 66⅔%
Gimp and Lace Tacks Lanc., Swedes Iron 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned 66⅔%
Gimp and Lace Tacks, S. S. 70%
Gimp and Lace Tacks Tinned, S. S. 70%
Swedes Iron Basket or Trimmers' Tacks, Lanc. 66⅔%
Miners' Tacks, S. S. 70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes 66⅔%
Bill-Poster's' or Railroad Tacks, S. S. 70%
Copper Tacks 50%
Copper Finish. & Trunk Nails 50%
Cigar Box Nails 60%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 50%
Tin-Capped Trunk Nails 60%
Finishing Nails 65%
Trunk and Clout Nails, Black and Tinned 66⅔%
Common and Patent Brads 60%
Hungarian Nails 62½%
Basket and Chair Nails 62½%
Leathered Carpet Tacks 40%

Miscellaneous—
Double-Pointed 82½%
Wire Carpet Nails 50&10%
Plymouth Rock Steel Carpet Tacks 25%

Extra 10&10@10&10¢ $—See Trade Report.

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—See Borers, Tap.

Tapes, Measuring—

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....25%
Albertson Mfg. Co.....30%
Beatty's.....30@30&5%
Sandusky Tool Co.....20%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mail. Iron Socket Peavies....₱ doz $19.00
Cant Hooks, "Blue Line"..₱ doz $16.00
Cant Hooks, Common Finish..₱doz$14.00
Cant Hooks, Mail. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mail. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00
Saw.
Atkins' Perfection.....₱ doz $12.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—
Mouse Wood,Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive....₱ dz $2.50 15%
Mouse, Bonanza.....₱ gr $10.00
Mouse Delusion.....₱ gr $10.00@$12.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 90¢; in full cases, ₱ doz.....75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer.....₱ gro $15.00

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ½ ℔ Balls	26¢	34¢
No. 12, ¼ and ½ ℔ Balls	25¢	33¢
No. 18, ¼ and ½ ℔ Balls	22¢	32¢
No. 24, ¼ and ½ ℔ Balls	22¢	32¢
No. 36, ¼ and ½ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ½ ℔ Balls.52@54¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls.....10¢
Wool.....6½¢@8½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&5%
Boilers and Saucepans.....40%
Tinned Boilers and Saucepans.....40%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11½ in.		4.00
Cuspidors		3.00
Spittoons, "Daisy," 8 in.	4.00	4.50
Peck Measure	4.00	
Half-peck Measure	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₱ doz.....$9.00
Basins, Ringed, ₱ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set.....$3 00
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton..... } 40&5%
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co..... } 40&5&5%
William Rogers Mfg. Co.....

Washers—

Size	¼	5-16	⅜	½	⅝	¾	1
Washers	6¾	5¾	4¾	3¾	3	2	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—

Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₱ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—
Market.
Br. & Ann., Nos. 0 to 18.....72½%
Cop'd, Nos. 0 to 18.....70%
Galv., Nos. 0 to 18.....62½%
Tin'd, Tinned list Nos. 0 to 18....62½%
Stone,
Br. and Ann'd, Nos. 16 to 18....72½%
Bright and Ann'd, Nos. 19 to 26.... 75%
Br. and Ann'd, Nos. 27 to 36.....77½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₱ ℔...5½¢
Galvanized Fence, Nos. 8 and 9.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin's Steel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire .....$6.00 to £, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₱ ℔
Picture Wire..... New list 50%
Wire Clothes Lines, see Lines.

Bright Wire Goods—
Standard list.....85%

Wire Cloth and Netting.
Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.60 @ $1.75
Galvanized Wire Netting.....70&10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&5%
Coes' "Mechanics'".....50&10&5%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard....70&10%
P. S. & W. Agricultural.....
Girard Agricultural..... } 75@75&10
Lamson & Sessions' Agric'l..
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....35%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List March 11, 1889, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886, 80&15@85%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	62	@	64
Linseed, City, boiled.....	64	@	66
Linseed, Western, raw.....	59	@	60
Lard, City, Extra Winter..	..	@	51
Lard, City, Prime.....	..	@	50
Lard, City, Extra No. 1.....	45	@	46
Lard, City, No. 1.....	42	@	43
Lard, Western, prime.....	49	@	50
Cotton-seed, Crude, prime..	..	@	30
Cotton-seed, Crude, off grades.....	22	@	26
Cotton-seed, Summer Yellow, prime.....	..	@	36
Cottonseed, Summer Yellow, off grades.....	30	@	34
Sperm, Crude.....	..	@	62½
Sperm, Natural Spring.....	66	@	68
Sperm, Bleached Spring....	71	@	73
Sperm, Natural Winter.....	77	@	76
Sperm, Bleached Winter...	78	@	81
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	49	@	..
Whale, Bleached Winter...	51	@	..
Whale, Extra Bleached.....	54	@	55
Sea Elephant, Bleached Winter.....	60	@	62
Menhaden, Crude, Sound...	21	@	23
Menhaden, Crude, Southern	..	@	..
Menh den, Light Pressed..	26	@	27
Menhaden, Bleached W'ter.	32	@	..
Menhaden, Extra Bleached	35	@	..
Tallow, City, prime.....	..	@	45
Tallow, Western, prime....	..	@	..
Cocoanut Ceylon.....	6¾	@	6¼
Cocoanut, Cochin.....	..	@	7¼
Cod, Domestic	32	@	34
Cod, Foreign.....	33	@	34
Red Elaine.....	31	@	34
Red Saponified..... ₱ ℔	4½	@	4½
Bank.....per gal	24	@	..
Straits.....	25	@	..
Olive, Italian, bbls.....	81	@	83
Neatsfoot, prime.....	62½	@	75
Palm, prime, Lagos....₱ ℔	5¾	@	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	8	@	9
Black, 29 gravity, 15 cold test.....	8½	@	9½
Black, 29 gravity, summer.		@	7
Cylinder, light, filtered.....		@	
Cylinder, dark, filtered	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	8½	@	9
Paraffine, red, 21 @ 22 gr'ty	14	@	14½
Paraffine, red, 22½@23 gr'ty	12	@	13

Paints and Colors.

Barytes, Prime White..... ₱ ton.	$22.00	@	$22.50
Barytes, Amer. refined	20.00	@	....
Barytes, Amer. No. 1	18.00	@	....
Barytes, Amer. No. 2	16.00	@	....
Barytes, Amer., off-color.	13.00	@	15.00
Blue, Celestial.....₱ ℔	5½	@	7½
Blue, Chinese	45	@	50
Blue, Prussian.....	20	@	35
Blue, Ultramarine	7	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	12	@	14
Black, Frankfort, Drop...	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk.... ₱ ton.	1.75	@	2.00
Chalk, in bbls..₱ 100 ℔.	30	@	35
China Clay, English.... ₱ ton.	13.50	@	18.00
China Clay, Southern...	10.00	@	11.50
Cobalt Oxide, prep'd....	2.90	@	....
Cobalt Oxide, black.... lots 100 ℔.	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔.	2.65	@	....
Crocus Martus, Engl.₱ ℔.	1½	@	2½
Crocus, American	1½	@	2½
Green, Paris, in bulk.....	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs.....	14½	@	15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	8	@	13
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	9	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 ℔..		@	7
Kegs, lots 1000 ℔ to 5 tons.		@	6½
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price.	@		½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	@		1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	@		2½
Lead, Red, bbls. and ½ bbls....	6	@	6¾
Lead, Red, kegs.....	6¼	@	7
Litharge, kegs.....	6¼	@	7
Litharge, bbls. and ½ bbls.....	6	@	6¾

TERMS, &c.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½	@	2½
Ocher, German Washed...	1¼	@	3
Ocher, American.....	½	@	1¼
Orange Mineral, English...	8½	@	9½
Orange Mineral, French....	9	@	9¾
Orange Mineral, German ..	8½	@	9½
Orange Mineral, American..	8	@	8½
Paris White, English Cliff-stone.....	90	@	1.10
Paris White, American.....	70	@	80
Red, Indian, English.....	5½	@	7
Red, Indian, American.....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₱ 100 ℔.	90	@	1.25
Red, Venetian, English....	1.00	@	1.45
Sienna, Italian, Burnt and Powd. ₱ ℔	5	@	6½
Sienna, Ital., burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½	@	1¾
Sienna, American, Burnt and Powdered.....	1½	@	1¾
Talc, French.....	1½	@	1½
Talc, American.....	1	@	1¼
Terra Alba, Fr'ch. ₱ 100 ℔	72½	@	80
Terra Alba, English	80	@	85
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	38	@	40
Umber, Turkey, Bnt. and Powd..... ₱ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered.....	3½	@	
Umber, Turkey, R'w Lmps	2¾	@	2¾
Umber, Turkey, Bnt. Amer.	1¼	@	1¾
Umber, Turkey, R'w Amer.	1¼	@	1¼
Yellow, Chrome.....	10	@	25
Vermilion, Americ. Lead..	11½	@	13
Vermilion, Quicks'er, bulk.	..	@	75
Vermilion, Quicks'er, bags.	..	@	76
Vermilion, Quicksilver, smaller pkgs.....	..	@	80
Vermilion, English Import	83	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste...	75	@	80
Vermilion, Chinese.....	88	@	90
Whiting, Common..₱ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry.... ₱ ℔	3½	@	4½
Zinc, French, Red Seal....	..	@	7½
Zinc, French, Green Seal..	..	@	7½
Zinc, French, V. M. X.....	6	@	6¾
Zinc, Antwerp, Red Seal...	..	@	6¾
Zinc, Antwerp, Green Seal	..	@	7½
Zinc, German, L. Z. O....	..	@	6¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¼	@	10¾
lots less than 1 ton	10½	@	11
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over....	9½	@	10
Lots of less than 1 ton....	9¾	@	10¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese .....₱ ℔	35	@	40
Blue, Prussian.....	29	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke..... ...	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	15	@	18
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Glue.

Low Grade.....₱ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	9	@	20
English.....	10	@	15
Irish.....	12	@	15

CURRENT METAL PRICES.

AUGUST 13, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron :	
¾ to 2 in. round and square.. 1 to 6 in. x ½ to 1 in.....	₩ lb 2.00 @ 2.10¢
Refined Iron :	
¾ to 2 in. round and square.. 1 to 4 in. x ½ to 1½ in..... 4½ to 6 in. x ½ to 1 in.....	₩ lb 2.20 @ 2.30¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.40 @ 2.50¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.30 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.50 @ 2.60¢
"Burden Best" Iron, base price.	₩ lb 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price	₩ lb 2 80 @ ....¢
"Ulster"	₩ lb 3.00 @ ....¢
Norway Bars	4.00 @ ....¢
Norway Shapes	5.00 @ ....¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ lb 3.00 @ 3.00¢	3.50 @	....¢
17 to 20	₩ lb 3.25 @ 3.25¢	3.50 @ 3.75	¢
21 to 24	₩ lb 3.35 @ 3.35¢	3.75 @	....¢
25 and 26	₩ lb 3 45 @	3.75 @	....¢
27	₩ lb 3.55 @ 3.62½¢	4.00 @	....¢
28	₩ lb 3.75 @ ....¢	4.25 @	....¢
	B. B.		2d qual.
Galv'd, 14 to 20,	₩ lb, 5.00 @ ...	4.75½ @	....¢
Galv'd, 21 to 24,	₩ lb, 5.37½ @ ...	5.12½ @	....¢
Galv'd, 25 to 26,	₩ lb, 5.75 @ ...	5.50 @	....¢
Galv'd, 27	₩ lb, 6.12½ @ ...	5.85½ @	....¢
Galv'd, 28	₩ lb, 6.50 @ ..	6.23 @	....¢
Patent Planished	₩ lb	A 10¢	B, 9¢
Russia	₩ lb	9½¢ @ 10¢	
American Cold Rolled B. B.	₩ lb	5¢ @ 7¢	
Craig Polished Sheet Steel	₩ lb,	8½¢	

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 45 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	22½¢
Straits, Pigs	22¾¢
Straits in Bars	25 ¢

Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Melyn Grade	IC, 10 x 14	@ $6.25
" "	IC, 12 x 12	@ 6.50
" "	IC, 14 x 20	@ 6.25
" "	IC, 20 x 28	@ 12.75
" "	IX, 10 x 14	@ 7.75
" "	IX, 12 x 12	@ 8.00
" "	IX, 14 x 20	@ 7.75
" "	IX, 20 x 28	@ 15.50
" "	DC, 12½ x 17	@ 5.75
" "	DX, 12½ x 17	@ 7.25
Calland Grade	IC, 10 x 14	@ 6.25
" "	IC, 12 x 12	@ 6.50
" "	IC, 14 x 20	@ 6.15
" "	IX, 10 x 14	@ 7.40
" "	IX, 12 x 12	@ 7.65
" "	IX 14 x 20	@ 7.40
Allaway Grade	IC, 10 x 14	@ 5.35
" "	IC, 12 x 12	@ 5.50
" "	IC, 14 x 20	@ 5.35
" "	IC, 20 x 28	@ 10.75
" "	IX, 10 x 14	@ 6.50
" "	IX, 12 x 12	@ 6.65
" "	IX, 14 x 20	@ 6.50
" "	IX, 20 x 28	@ 13.25
" "	DC, 12½ x 17	@ 5.00
" "	DX, 12½ x 17	6.00 @ 6.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	@	$5.12½
10 x 20	@	7.25
20 x 28	@	10.25
IX, 10 x 14, 14 x 20	@	6.00
BV Grade.—IC, 10 x 14, 14 x 20	@	4.87½

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20	@	$5.00
20 x 28	@	10.00
IX, 14 x 20	@	5.80
20 x 28	@	11.60
Adecarte Grade.—IC, 14 x 20	@	4.85
20 x 28	@	9.87
IX, 14 x 20	@	5.83
20 x 28	@	11.60

Tin Boiler Plates.

IXX, 14 x 26	112 sheets	$13.00 @ $13.00
IXX, 14 x 28	112 sheets	@ 13.25
IXX, 14 x 31	112 sheets	@ 14.75

Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem

Ingot.

Lake	@ 17½¢
Baltimore Grade	@ 15 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, June 27, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	26	27	28	31	33
30		72	25	25	25	26	28	30	34	....
36	96		25	25	25	27	29	33	36	....
36		96	25	25	26	28	30	34	38	....
48	96		25	25	27	29	31	35	....	....
48		96	25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60		96	25	26	31	....	....	....	....	....
84	96		26	27	....	....	....	....	....	....
84		96	27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

All Bath Tub Sheets	16 oz.	14 oz.	12 oz.	10 oz.	
Per pound	$0.27	0.29	0 31	0.35	

Per pound, 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier	29¢
12 ounce and up to 14 ounce to square foot	30¢
10 ounce and up to 12 ounce	32¢

Circles less than 8 inches diameter 5 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb
12 oz. and lighter.....33¢. By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	39	35	32	31	30	29	26
15	13	40	35	33	32	31	30	27
16	14	41	36	34	33	32	31	27
17	15	42	37	35	32	33	32	28
18	16	44	38	36	34	33	32	29
19	17	45	39	37	36	35	34	31
20	18-19	46	41	39	38	37	36	33
21	20	48	43	41	40	39	38	36
22	21	50	44	42	41	40	39	38
23	22	52	46	44	43	42	41	41
24	23	55	48	46	45	43	42	43
25	24	58	51	48	47	46	45	47

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	25 @ ... %

Roll and Sheet Brass.

Discount from list 20 %

High Brass Rods.

Over 1 inch diameter	29¢
¼ inch to 1 inch diameter, both inclusive	36¢
No. 8 and less than ¼ inch diameter	28¢
Smaller than No. 8	32¢

Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6¼¢
"Bertha"	8¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks	6¼¢
Per lb	7¼¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	4½¢
Bar	5 ¢
Pipe, subject to trade discount	7 ¢
Tin-Lined Pipe, subject to trade discount	15¢
Block Tin Pipes, subject to trade discount	40¢
Sheet, subject to trade discount	7¼¢

Solder.

½ @ ½ (Guaranteed)	15 ¢
No. 1	12 ¢
Extra Wiping	11¼¢ @ 12 ¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 25 ¢
Hallett's	" 21½¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

Prices Per Pound on Rolled Sheets.

(Brown & Sharpe, Standard Gauge.)

Wider than. / And including.	2 in. 10 in.	10 in. 14 in.	14 in. 18 in.	18 in. 22 in.	22 in. 24 in.
Up to No. 20 inclusive	$2.50	$2.60	$2.80	$3.00	$3.20
Nos. 21, 22, 23 and 24	2.60	2.70	2.90	3 10	3.30
Nos. 25 and 26	2.70	2.80	3.00	3.20	3.40
Nos. 27 and 28	2.80	2.90	3.10	3.30	3.50

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.
Add 30 cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

Aluminum Wire in Coils.

(Brown & Sharpe, Standard Gauge.)

	Per lb
All numbers up to No. 14 (.064 in.) inclusive	$3.00
Nos. 15 (.05706 in.) to 22 (.0z534 in.) inclusive	3.25
Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive	3.50
Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive	3.75
Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive	4.00
Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive	4.25
No. 31 (.008928 in.)	4.50
No. 32 (.00795 in.)	4.75
No. 33 (.00708 in.)	5.00
No. 34 (.00630 in.)	5.25
No. 35 (.00561 in.)	5.75
No. 36 (.00500 in.)	6.25
No. 37 (.00445 in.)	7.00
No. 38 (.003965 in.)	8.50
No. 39 (.003531 in.)	12.00
No. 40 (.003144 in.)	16.00

Spooling, on 1-pound spools, 15 cents per pound extra.
Spooling on [illegible]-pound spools, 5 cents per pound extra.